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# THE ARCHITECTS' & BUILDERS' JOURNAL.

*A Weekly Journal for Architects Surveyors  
Builders and Constructional Engineers.*

It is our aim, our ambition, our aspiration even, to build our journal worthily and well, not for the hour only, but for future years; for the few men in the forefront of an enduring and a laborious art; for the disciplined ranks of a distinguished profession; for the young men—Architects to be—and for all who love a clustered column or a flying buttress, a traceried window or a Greek frieze; for the man, too, who honestly plumbs a jamb.

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- I.—The Great Keep, Château de Coucy (R. Phené Spiers), May 30.
- II.—Interior of the Ulpian Basilica, Rome (C. R. Cockerell), June 6.
- III.—The Forum of Nerva, Rome (C. R. Cockerell), June 13.

## COMMEMORATIVE COLUMNS AND OBELISKS—

- I.—Trojan's Column, Rome (Canina) Feb. 7.
- II.—Columns of Marcus Aurelius and Antoninus Pius, Rome (Canina), Feb. 14.
- III.—Vendôme Column, Paris, Feb. 21.
- IV.—Column of the Grand Army, Boulogne (Henry and De La Barre), Feb. 28.
- V.—Rostral Columns, Bordeaux, March 7.
- VI.—The Duke of York's Column, St. James's Park (Benjamin Wyatt), March 14.
- VII.—Prison Ship Martyrs' Monument, Brooklyn, N.Y. (McKim, Mead, and White), April 11.
- VIII. and VIIIA.—The Monument, London (Sir Christopher Wren), April 25.
- IX.—The July Column, Paris (Alavoine and Duc), May 30.

## CURRENT ARCHITECTURE (SERIES IV.)—

- XI.—Proposed Flats and Picture House, High Street, Kensington (Robert Atkinson and George L. Alexander) Jan. 17.
- XII.—Prince of Wales Picture House, Clayton Square, Liverpool (George L. Alexander and Matthew Watson, Landless, and Pearse), Jan. 17.
- XIII.—Premises of London Shoe Company, Nos. 116 and 117, New Bond Street, London (Interior Decoration by Andrew Russell), Jan. 24.
- XIV.—Queen's Canadian Military Hospital, Shorncliffe, Kent (W. Henry White), Feb. 28.
- XV. and XVI.—Carnegie Library, Chorlton-cum-Hardy, Manchester (Henry Price), April 4.
- XVII.-XIX.—Union of London and Smiths Bank, Ltd., Regent Street, W. (Dunn, Watson, and Curtis Green), April 18.
- XX.—Dilke House, Malet Street, London, W.C. (W. E. Vernon Crompton), May 2.
- XXI.—New School for Girls, Kingarth Street, Glasgow (Thomson and Sandilands), May 23.
- XXII.—Detail of Façade in Upper Kennington Lane, Duchy of Cornwall Estate, Kennington (Adshead and Ramsay), May 30.
- XXIII.—Reconstruction of Charing Cross Station, Underground Railway (H. W. Ford), June 6.
- XXIV. and XXV.—Reconstruction of the Temple Station, Underground Railway (H. W. Ford), June 13.

## DETAILS OF CRAFTSMANSHIP (SERIES II.)—

- XVIII.—Wrought-iron Balustrade, No. 5, Bloomsbury Square, W.C., Jan. 3.
- XIX.—Plasterwork on Ceilings, Harewood House, London (Robert Adam), Jan. 17.
- XX.—Chimney on Lodge, Kew Gardens (Eden Nesfield), Jan. 24.
- XXI.—Enrichment of Overmantel in Morning-room, 18, Bryanston Square, London, W. (Atkinson and Alexander), Jan. 31.
- XXII.—Iron Stair Balustrading, City Hall, New York (John McComb), Feb. 21.

XXIII.—Carved Finials on Newels of Staircase, Kinfauns Castle, Perth, March 14.

XXIV.—Staircase, East Cliff House, Hastings, March 21.

XXV.—Corner of Plaster Ceiling at "Littlecroft," Whetstone (Laurence Turner), April 11.

XXVI.—Dublin Plasterwork, April 11.

XXVa.—Interior Details from 21, College Hill, E.C. (Measured and Drawn by Lawrence Furniss), April 18.

XXVIA.—Interior Details from Wren's Reputed Residence in Botolph Lane (Lawrence Furniss), April 25.

XXVII.—No. 9, Clifford Street, W., May 16.

XXVIII.—Staircase, No. 9, Clifford Street, W., May 23.

XXIX.—The Staircase, No. 25, High Street, Guildford, June 6.

XXX.—Carved Oak Chimney-piece and Overmantel, June 13.

XXXI.—Entrance to Bassett House, Hamden, Conn. (J. Frederick Kelly), June 13.

## DOORS AND DOORWAYS—

XVI.—A Door in the Galleria Poldi Pezzoli, Milan, Feb. 7.

XVII.—Doorway, Rue des Archives, Paris, Feb. 21.

## EARLY NINETEENTH-CENTURY ARCHITECTURE (SERIES II.)—

- I.—A "First-Rate" House of 1837 (M. A. Nicholson), Jan. 31.
- II.—A "Second-Rate" House of 1837, Jan. 31.

## ENGLISH INTERIORS—

VII.—First Drawing Room, Lansdowne House, London (Robert Adam), Jan. 24.

## LONDON FACADES—

XV.—Eighteenth Century Houses, Chiswick Lane, March 21.

## MODERN AMERICAN ARCHITECTURE (SERIES II.)—

- XXIII. and XXIV.—House at Southampton, Long Island, New York (Aymar Embury II.), Jan. 3.
- XXV.—House on Park Avenue, 68th Street, New York (McKim, Mead, and White), Jan. 10.
- XXVI.—Lobby, Union Station, Washington (D. H. Burnham and Co.), Jan. 17.
- XXVII.-XXIX.—Telephone and Telegraph Building, New York (William Welles Bosworth), Feb. 14.
- XXX. and XXXI.—City of New York College Stadium (A. W. Brunner), April 25.
- XXXII.—Doremus Memorial Gymnasium, Washington and Lee University, Lexington, Va. (Flournoy and Flournoy), May 16.
- XXXIII.—Offices of the Members of the House of Representatives, United States Capitol Group, Washington (Carrère and Hastings), May 30.

## MODERN BRITISH SCULPTURE—

- I.—Statuary for Cardiff City Hall, Exhibited at the Royal Academy (T. J. Clapperton, Henry Pegram, Henry Poole, Sir W. Goscombe John, L. S. Merrifield, F. W. Pomeroy), May 30.
- II.—Figures to be Erected on the Kelvinway Bridge, Glasgow (Paul R. Montford), June 6.

## MODERN DOMESTIC ARCHITECTURE (SERIES II.)—

XLVI.—Farm Houses at Postbridge, Devon (Richardson and Gill), Jan. 10.

XLVII.—Morning Room, 18, Bryanston Square, London, W. (Atkinson and Alexander), Jan. 31.

XLVIII.—Staircase, Kinfauns Castle, Perth (F. W. Deas), March 14.

XLIX. and L.—Hutments for Munition Workers, Well Hall, Eltham, Kent, March 28.

## MODERN DOMESTIC ARCHITECTURE (SERIES III.)—

- I.—"Dalnyreed," Barley, near Royston, Herts (Edgar Wood), April 4.
- II.—Trellis Garden Pavilion, 5, Ullet Road, Liverpool (Professor C. H. Reilly), April 4.
- III.—House in Heath Drive, Gidea Park, Romford (Ronald P. Jones), April 11.
- IV.—House at Hanger Hill, Ealing (W. E. Vernon Crompton), May 2.
- V.—The Drawing Room, Framingham Hall (George J. Skipper), May 9.
- VI.—Hall and Staircase, "Heathcote," Ilkley, Yorks (Edwin L. Lutyens), May 9.
- VII.—No. 90a, Harley Street, W. (Sidney J. Tatchell), May 16.

## MODERN FRENCH ARCHITECTURE—

- I.—Premises of the Compagnie Générale Transatlantique, Paris (H. P. Nénot), June 20.
- II.-V.—The Sorbonne, Paris (H. P. Nénot), June 20.
- VI.—Entrance to Bank, Paris (H. P. Nénot), June 20.
- VII.-IX., XII.—Océanographique Institute, Rue Saint-Jacques, Paris (H. P. Nénot), June 27.
- X.—Entrance to Louis Dreyfus Bank, Place des Victoires, Paris (H. P. Nénot), June 27.
- XI.—Louis Dreyfus Bank, Rue de la Banque, Paris (Henri Paul Nénot), June 27.

## MODERN INDUSTRIAL BUILDINGS—

- I.—Orchestrelle Factory, Hayes, Middlesex (Walter Cave), Jan. 10.
- II.—Motor Works for Tilling-Stevens, Ltd. (Wallis, Gilbert, and Partners), Jan. 31.
- III.—Mess Rooms in Connection with a Large Munitions Factory (Buckland, Haywood, and Farmer), Feb. 7.
- IV.—Erecting Shop of a Motor Car Works (A. Alban H. Scott), Feb. 28.
- V.—An Engineering Shop (A. Alban H. Scott), Feb. 28.
- VI.—A Canteen (A. Alban H. Scott), March 28.
- VII.—A Munitions Factory (A. Alban H. Scott), April 4.

## MONUMENTAL ARCHITECTURE (SERIES II.)—

- IV.—Hanover Chapel, Regent Street, London (C. R. Cockerell), Jan. 3.
- V.—St. Martin's Church, Trafalgar Square (James Gibbs), Jan. 10.
- VI.—The Admiralty, Petrograd (Zakharoff), Jan. 17.
- VII.—Front of Buckingham Palace as Originally Built (John Nash), Feb. 7.
- VIII.—Garden Front of Buckingham Palace as Originally Built (John Nash), Feb. 7.
- IX.—The Colosseum, Regent's Park, London (Decimus Burton), Feb. 21.
- X.—Entrances, St. George's Hall, Liverpool (Harvey Lonsdale Elmes and C. R. Cockerell), March 21.
- XI.—Cathedral of Kazan, Petrograd (Voronikhine), March 28.

XII.—St. George's Hall, Liverpool: South Portico (H. L. Elmes), April 11.

XIII.—The Capitol, Washington: East Front, May 9.

XIV.—The East Front of the Louvre, Paris (Perrault), May 28.

## MONUMENTS—

- XXVI.—Monument to Combatants in War of 1870-71, at Orange, France (G. Michel), Jan. 24.
- XXVII.—Monument to Captains Harvey and Hutt in Westminster Abbey (John Bacon, jun.), Feb. 14.
- XXVIII.—Hogarth's Tomb, Chiswick; Mausoleum, Père Lachaise, Paris, March 21.

## SCIENCE AND TECHNICAL BUILDINGS—

- XXI.—King's College for Women, Kensington; Detail of Fume Cupboards in Chemistry Laboratory (H. Percy Adams and Charles Holden), Feb. 21.
- XXII.—Inorganic Chemistry Laboratory, University College, London (Professor F. M. Simpson), March 7.
- XXIII.—Physical Chemistry Laboratory, University College, London (Professor F. M. Simpson), March 7.
- XXIV.—Chemistry Building, University College, London (Professor F. M. Simpson), March 7.
- XXV.—New Chemistry Building for the University of Oxford (Paul Waterhouse), March 14.
- XXVI.—New Laboratories, University College, London (Professor F. M. Simpson), April 18.

## SMALL HOUSES OF THE LATE GEORGIAN PERIOD (SERIES II.)—

XLII.—Houses Facing Alfred Square, Deal, March 14.

## STUDENTS' DRAWINGS (SERIES II.)—

- XLI.—Façade of Armitage and Wolff's Premises, Manchester (Measured and Drawn by Gordon Hemm), March 7.
- XLII.—Design for a Branch Library (Francisco Munguia), March 21.
- XLIII. and XLIV.—Holy Trinity Church, Hotwells, Bristol (Gordon Hemm), May 2.
- XLV.—Design for a Mausoleum (Gordon Hemm), May 9.
- XLVI.—The Council House, Bristol (A. Clifford Holliday), May 16.
- XLVII.—The Bank of England, Bristol (Gordon Hemm), May 23.

## WORKING DRAWINGS, ARCHITECTS' (SERIES II.)—

- XXXIV.—English Church, Bucharest, Roumania (Prof. Beresford Pite), Jan. 3.
- XXXV.—Queen's Canadian Military Hospital, Shorncliffe, Kent: Details of Roof and Window Construction (W. Henry White), Feb. 28.
- XXXVI.—Hutments for Munition Workers, Well Hall, Eltham, Kent: Details of Construction, March 28.
- XXXVII.—Grain Silo and Mill Extension, Soar Lane, Leicester (Everard, Son, and Pick), May 2.
- XXXVIII.—Cottages at Fordington, for the Duchy of Cornwall (Richardson and Gill), May 9.
- XXXIX.—Stadium at McGill University, Montreal (W. D. Lawrence), May 16.
- XL.—Isolation Hospital, West Bromwich (Gerald McMichael), May 23.
- XLI.—Reconstruction of Charing Cross Underground Station for the District Railway (H. W. Ford), June 6.



## ARTISTS AND AUTHORS.

- ADAM, ROBERT**, Jan. 17, Jan. 24.  
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# THE ARCHITECTS' & BUILDERS' JOURNAL.

Wednesday, January 3, 1917.

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ABU SIMBEL

*From a water-colour drawing by A. C. Conra le.*



# THE ARCHITECTS' & BUILDERS' JOURNAL.

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## EDITORIAL.

A PARAGRAPH printed among our news items in the present issue records the purchase by the City of London Corporation of premises in St. Paul's Churchyard for £30,000. This, it is understood, is a preliminary step towards the clearances to be made in connection with the St. Paul's Bridge scheme. It is evident, therefore, that the Corporation intend to proceed under the powers conferred by the St. Paul's Bridge Act, 1913. Presumably the purchase has been made as a consequence either of some maturing agreement, or of some exceptionally favourable opportunity. Otherwise so large an expenditure during war-time would seem to lack justification. That, however, is a question of conscience into which we do not care to enter. We are more nearly concerned to inquire whether the expenditure of this considerable sum commits the Corporation to a scheme defined before the war changed the outlook in every direction and, in particular, raised the question of memorial bridges, and aroused immense interest in the larger problem of the re-planning of London. If the Corporation is well advised, it will not act independently of the Charing Cross scheme; for not only will the more easterly bridge of St. Paul's and the more westerly bridge of Charing Cross be in sight of each other, and (from a height) observable in one *coup d'œil*, but the traffic problems that each will affect may be advantageously correlated.

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Both æsthetically and economically the two bridges will either antagonise or help each other; and that they may be mutually helpful should be the anxious concern of the promoters of both schemes, who should obviously confer and co-operate. This would be a wildly fantastic suggestion but for the war, which has reconciled so many minor antagonisms, and might even heal the old-standing breach between the Corporation and the extramural authorities. Such a union would get rid of those hideous monstrosities—the Three Disgraces of London—the railway bridges which respectively disfigure the Thames at Cannon Street, at Blackfriars, and at Charing Cross. Incidentally, the ugly viaduct at the foot of Ludgate Hill would disappear, and its removal would be a mere act of justice to St. Paul's Cathedral, of which it completely ruins the view from the west. Such reforms are bound to come sooner or later; and no premature and unconcerted movement such as that foreshadowed by the Corporation's £30,000 purchase, should be allowed to postpone the inevitable ultimate issue.

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"Down with the policemen, and up with the cinemas," is said to be the motto of the Prefect of Nancy, who is providing moving picture shows for the entertainment of boy refugees. Each small show, he avers, keeps the boys in better order than two police-

men could. In our own country it is generally held that the more the picture palaces, the more the juvenile offenders. Clearly the point is debatable, and it hardly comes within our province. There arises from it, however, a point that should receive attention. In the near future, cinemas will play a more important part in education. Already their possibilities in this respect have been to some extent demonstrated; but it is easy to imagine very considerable developments, and educational authorities may be trusted not to neglect so potent an instrument. Revised methods of conveying information will include the more general use of moving pictures; and whether instructive films are included more abundantly at the public cinemas, or whether they are thrown on the screen in classroom or lecture-hall, their more common adoption will have some slight influence on design. In the former case the elevation should reflect the greater seriousness of character which the picture-house will assume when education is a regular and definite aim; in both there must be provision for the safe and convenient operation of the lantern. In the 1917 issue of "Specification," which is now in the press, illustrations are given of a West End cinema which is noteworthy for the fine architectural quality given to a class of building that is too often characterised by clumsy features and a riot of badly-designed ornament.

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Minor matters of amenity, as Mr. Joseph Thorp recently reminded the London Society, are rather apt to be ignored when grand schemes of town-planning absorb attention. There are, as he remarked, many small reforms which the Society could effect, such as the orderly naming of streets and numbering of houses. He suggested, also, that black fogs could be prevented by the suppression of black smoke, but that is a more speculative proposition. It emphasises, however, the need for more system in the labelling of streets. Those "strayed revellers" who, to the number of many thousands, tried to grope their way home through the dense fogs last week, had good reason to complain of the absence of reasonable guidance on their way. Very many of them had provided themselves with electric lights, with which it was sometimes possible to ascertain the name of a street upon which one had stumbled; but very often the label was out of range—high up on a house with a long forecourt or "front garden" well off the roadway, and not seldom obscured by creepers. One never knows where to look for the street name. It may be anywhere or nowhere, and the nuisance is bad enough in broad daylight, without the emphasis of "chaos and old night." It should and could be easily remedied, and the London Society will do a good work if it secures this very useful reform, which can be lifted out of the category of sheer utility by an insistence on decent lettering in the labels.



Serious accidents have often caused modified views of construction; and a fall of bricks from a factory chimney-shaft in course of erection, and the subsequent inquiry into the death of a man upon whom they fell, may possibly have the effect of making designers chary of contriving decorative effects at the summit of tall chimneys. About two hundred new laid bricks fell from a height of 150 ft., but exactly why they fell was not definitely ascertained. It was suggested that frosty weather was at the root of the trouble, and questions were raised as to the utility of an oversailing course which seems to have been involved, and was suspected of being contributory to the trouble. Supposing that frost prevented the mortar from setting, and that the force of gravity, acting on the overhanging work, did the rest, there arises the curious question of whether the oversailing course, in revealing the effect of the frost, which conceivably might otherwise have remained undiscovered, did not actually prevent a worse accident than that which unfortunately occurred. In normal times, such work is usually reserved for frostless seasons, because of the difficulty of protecting it; but that the job in question was a matter of emergency is evident from the fact that it was allowed to be done. At the inquest upon the victim of the accident, it was, in the circumstances, rightly held that no one was to blame; but the lessons to be drawn from the accident are quite obvious, and will not be lost upon professional and practical builders, to whose earnest attention we need hardly commend them.

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There seems to have set in something like a reaction in favour of the harmless, necessary plumber. Before the War he was the best-abused craftsman in the kingdom. In the day of adversity and frosts it has been discovered that he is the one man who cannot be spared for the War. But as he has become scarce, there are innumerable emergencies in which one must perforce do without him. A few sharp frosts, and their consequences to the water-pipes, have convinced householders that the plumber is a much-maligned man whose eccentricities they would gladly endure if only they could get him on the scene of his former triumphs and tyrannies. If he would only come back, with his imposing kit-bag jewelled in several holes with leaden eyelets, all would be forgotten and forgiven. But he cometh not. Even though he is beyond service age or has been exempted, the State still claims him for her own, because she has need of his natural magic—his joint-wiping, pipe-shaving, blow-lamping exorcism of the imps of impurity. And so the forlorn householder must needs perform on his own pipes of Pan. Our own advice to him, however, would be that, if he would avoid horrible domestic discord, he should severely abstain from tinkering with them. Only one thing may he wisely attempt, and that by way of prevention rather than of cure. He may protect his pipes from frost by providing them with a suitable covering—not of straw-bands and old newspapers, but of specially designed insulating material, which, in the consecrated phrase of the loved-and-lost plumber, will “make a good job of it” by presenting a neat appearance and affording effectual protection from frost.

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In reviewing a book entitled “Arts and Crafts: A review of the work executed by students in the leading art schools of Great Britain and Ireland,” which is a special issue of “The Studio,” a critic writing in “The Times Literary Supplement” is, it seems to us, rather severe on the work of students. “The great mass of work produced in our art schools,” he declares, “is not what the public wants, nor is it what any indi-

vidual in love with beauty wants. It has a peculiar art-school quality of its own, which one recognises at a glance, the quality of work produced by students because they have been taught that it is what they ought to produce, not because any one in particular wants it.” This is merely to say, rather turgidly, that it is the work of students in training. It should be judged as such, and not as if it were being produced to put on the market. That the critic sees this pretty clearly is evident from the parallel he draws between the productions of the art school and those of the general school: “There is no market for a school essay, because it is written for the schoolmaster to read; and he reads it only because he has to decide whether it is better or worse than other essays of the same kind; and there is no market for the work of art students, for the same reason.” Precisely. This might be regarded as an excellent apology for the art student, if it were not obvious from the tenour of the article that the critic rather expects the student to produce for the market, and not to pursue “academic distinction.” This is to confound the respective functions of the school and the workshop. This strange misapprehension of the aims and methods of education is strongly if not widely prevalent just now; and the present instance of it would not be worth noticing if it were not typical.

\* \* \* \*

A workman's compensation case of peculiar interest has been decided in the Newcastle County Court. A foreman joiner was employed in the repair of fish-trays, and it appears that from these trays particles of “decayed fish matter” rose in dust, and, entering the joiner's mouth, set up poisoning. In opposing the subsequent claim for compensation under the Workmen's Compensation Act counsel contended that, to establish the claim, it was necessary to produce definite evidence of the time when the poisoning occurred, and of something in the nature of an accident. Judge Greenwell, in deciding in favour of the plaintiff, no doubt justly interpreted the spirit and intention of the law, which is that a man who suffers injury in the course of his employment shall be compensated for it, whether the injury is internal or external, insidious or palpable. In its first state, the Act contemplated only such accidents as were sudden and palpable—as a blow, a cut, or a fall: but it was soon urged, with success, that this discrimination was hard on workmen suffering seriously from more insidious forms of injury, such as the poisoning in the Newcastle case, or the plumbism incidental to several occupations more or less closely related to the building industries.

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Insidious industrial diseases, such as poisoning, are often so obscure in their origin as to be untraceable to it; and if a workman happens to change his situation during the incubation period, it is quite possible that responsibility for the onset may be wrongly fastened on the employer in whose service the man happens to be when the disease develops. All things considered, it is rather surprising that the amending Act of 1906 (to the Workmen's Compensation Act of 1897), in which industrial diseases were first scheduled, has not given rise to even more litigation than has actually occurred. But there is no question that this extension of the scope of the Act has had beneficial effects in making employers more solicitous to provide healthy conditions of labour; in directing the attention of doctors to a closer study of industrial diseases; and in compensating those workers who, in the course of their employment, become casualties from being “gassed” rather than “hit.” On the other hand, it has set up a fresh crop of abuses, and provided further opportunities for malingering.



## HERE AND THERE.

IT was the elegant Sterne, I think, who laid it down as essential to the proper frame of mind for writing that he should first put a clean shirt on. In these more strenuous days, when economy is a cardinal virtue, we cannot perhaps follow his precept, but in the newest week of a new year we must not fail to take a fresh sheet and a fresh pen, in order to have things proper at the beginning at least, whatever shortcomings may occur as the months go by. And, armed with these clean tools of the trade, we may proceed to take stock of our position, turning over in the mind what our aims are, and how far we are on the way to attaining them. As proper to the occasion, also, we must be ready to extend a generous tolerance to those who are travelling along lines that widely differ from our own. Nor can many of us, on the threshold of a momentous year, but muse on where we shall be at the end of it—many of us, perhaps, in the not far distant future will have forsaken the familiar task in order to take up another, a national task fraught with all manner of strange, maybe tragic, possibilities. But meanwhile, till the call comes, we cannot do better than keep steady to our apportioned labour, whether “working in these walls of Time” we be doing “mighty deeds and great,” or spinning “ornaments of rhyme.”

\* \* \* \*

The Minister of Munitions, while with great urbanity taking away the work exceeding £500 which we should like to carry out, makes the consoling suggestion that we should now, at any rate, take advantage of the present enforced leisure by preparing plans for the future—*après la guerre est fini*, to quote the most cherished phrase of Tommy in France. These plans abound with difficulties that demand an *après la guerre* solution, by which I mean that the things which did well enough before the War will not do for the future: for the most inured cynic must admit that the War cannot leave us where we were before. The old conditions will no longer be acceptable, and we shall have to make new prodigious efforts to meet the altered conditions. Hazarding a guess as to what problems will face architects and builders especially after the War, I would say that these are resolved into three main classes of buildings—houses for the workers (and there is the hard-working middle class to take count of as well as the rural labourer and the town artisan); factories; and technical education buildings. On these three classes I may offer a few remarks.

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On the subject of housing it seems to me the great aim in the future will be not only to secure better individual accommodation, but also to see that there is in every case a co-ordinated scheme on town-planning lines, and that instead of a mass of miscellaneous houses springing up at the instance of any estate developer who wants to make money, and a sprinkling of shop premises being set up haphazard to meet the local requirements, there shall be from the start a definite colony idea, with a pre-arranged place for the shops, in the most convenient area, and selected places for public buildings of communal interest, such as institutes, churches, theatres, or galleries, around which the colony would be grouped, and the existence of which would provide a focus of interest in the general scheme. The garden city enthusiasts have of course had this idea in the forefront of their programme for years past, but with them it has been too much trimmed up with queer social notions. “The garden city” has become an unfortunate title, allied to something which the ordinary man does not care to tackle, but I am convinced there is the very

kernel of an excellent idea in it—inasmuch as people are not going to rest content with the dull rows of speculative houses which make the average suburb a place to get away from. We need not wrangle over the particular architectural style of the houses so long as they display an air of coherence and form part of a good general scheme. I, for instance, as my readers well know, would plump for houses exhibiting a modern treatment based on the Late Georgian, which seems to me to be the thread we never should have dropped, but only last week in this Journal there was shown a colony of houses at Well Hall which present a very agreeable appearance, although conforming to an altogether different formula; albeit the controlling condition that they should be put up with the greatest speed has resulted in a meandering street plan which is not to my liking. As regards the planning of houses, I think an imperative need for the future is to have larger rooms. “Long and low” may be an attraction in the auctioneer’s advertisement of some rambling old farmhouse, but “small and low” in the modern house means miserable rooms—dining-rooms with very little space left when the table is in, poky little kitchens and sculleries where no woman can carry out her work with comfort and convenience, and bedrooms of the pill-box order, whose skimpy floor area is probably made ten times worse by a sloping ceiling. These things must all be altered. That they can be, without serious additional expense, was very clearly shown by the plans submitted in the suburban house competition which aroused so much interest in this Journal some years ago.

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Turning next to the subject of factories, we find again the new element making itself felt, in the demand for better conditions and accommodation for the workers who spend so much of their time in these hives of industry. What is known in America as the “daylight factory” is, without doubt, the type that will be generally adopted in the future. It means a building having the utmost amount of window area, this aim being attained in the majority of cases by a reinforced concrete frame filled in with steel sashes. The floors of the factory have large spans unobstructed by columns, and the machinery installed on them is so placed in relation to receiving and delivery plant that the utmost efficiency is secured. The lay-out of the factory is, in fact, of no less importance than its equipment, so that, to cite a familiar illustration, the pigs (or the leather or the tinplates) go in at one end and come out at the other as sausages, boots, or biscuit tins. And in conjunction with the technical side of the factory there is the human side, expressed in the provision of comfortable quarters where workers can have their meals, clean places where they can wash and put themselves tidy (the colliery of the future, let it not be forgotten, is to have its washing rooms, like those at Treharris), and pleasantly laid out grounds, where they can take a breath of fresh air in the dinner hour or the tea time. The old factory was simply an indifferently lighted, indifferently ventilated, box into which were crowded as many human beings as the Act would allow, and, having got them in, the sole idea was to work them continuously for so many hours, leaving all thought of personal welfare out of the reckoning. Port Sunlight, Bournville, and similar ventures, point the better way, and prove that you can get men and women to work much more efficiently if only you will put them in decent surroundings and pay some regard to their souls as well as their bodies.

With the third subject, “science” and “technics,” there is not space to deal. My remarks under this head must therefore be held over till next week.

UBIQUE.



# INCOME TAX EXPLAINED FOR ARCHITECTS, BUILDERS, AND BUILDING OWNERS.

[SPECIALLY CONTRIBUTED BY G. S. MITCHELL, F.S.I.]

**I**NCOME-TAX is a national charge which is raised for purposes of Imperial revenue, and varies year by year in accordance with the needs of the Exchequer. It is levied on all residents in the United Kingdom, whether subjects of His Majesty or not, and also on all persons not resident within the United Kingdom is so far as they derive income from property, trade, or employment in the United Kingdom.

The first tax on incomes was imposed by Pitt in 1798. It was instituted under "an Act for granting to His Majesty an aid and contribution to the prosecution of the war," which was then raging between England and France (1793 to 1815), and, with the exception of the year 1802, was levied annually until 1816; the rate was originally 1s. in the £, but during this period it rose to 2s. (1807). At the outset it was the distinct intention of Parliament that this tax should be solely regarded as a war tax, but in 1842 it was re-imposed by Sir Robert Peel for the purpose of meeting the cost of the Government reforms in the interest of the commerce and manufactures of the kingdom.

In 1853 a still more comprehensive view of the financial necessities of the country resulted in the imposition of the tax for seven consecutive years, during which period it was the intention to reduce the amount from 7d. to 5d. in the £, and then abolish it altogether. In 1854, however, the Crimean War broke out; the tax was therefore doubled, and in 1860, instead of being abolished, it was continued at the increased rate of 10d. in the £. Ever since it has been annually levied at varying rates, its continued existence being dependent on a new Act for each successive year, *i.e.*, from and to April 5. The tax is, however, made payable on January 1 in the financial year.

The exigencies of the present war have so increased the national expenditure that a charge reaching a maximum of 5s. in the £ is now required, and the writer thinks that a short description of its application may be acceptable to the readers of THE ARCHITECTS' AND BUILDERS' JOURNAL.

Willingly though the tax is paid under the existing circumstances, there are many persons upon whom it falls heavily—often because they are unaware of the methods of rebate and relief, and to such it is hoped this may prove of special interest. For the purposes of assessment and collection incomes are divided into classes or "schedules," according to their sources, as follows: *Schedule A.*—In respect of the property in all lands, and tenements, in the United Kingdom. *Schedule B.*—In respect of the occupation of all such lands. *Schedules C and E.*—In respect of interest, annuities, dividends, etc., payable out of any public revenue or received from the Crown. *Schedule D.*—In respect of the annual profit from any profession, trade, employment, or vocation, whether the same shall be carried on in the United Kingdom or elsewhere.

*Schedule A.*—This is charged upon owners of real estate, and is usually known as "the landlord's property tax," and, though for convenience sake it is collected by Government in the first instance from the occupier, he, having first paid the tax, is entitled to recover it from his landlord by deducting the amount of duty paid from the next rent, which is paid after the date of the tax receipt, up to an amount not exceeding the correct rate in the £ on the rent payable for the year. A covenant by a tenant to bear this tax is simply null and void. The landlord is liable to a

penalty of £50 should he refuse to refund the tax. If the tenant does not deduct the tax from the next rent he cannot recover it from the landlord at all.

The "annual value" is the rent by the year at which the property is let at rack-rent; if such rent shall have been fixed by agreement commencing within the period of seven years preceding April 5 next before the time of making the assessment, but if the same is not let at rack-rent, then the annual value must be the rack-rent at which the premises are worth to be let by the year.

As a rule the assessment to income-tax is based upon the "gross estimated rental" of the property, rate valuation, and from this the following deductions and allowances are made: (a) Repairs,  $\frac{1}{4}$ th of the gross value is allowed in assessing lands, inclusive of a farmhouse and buildings, and  $\frac{1}{8}$ th in assessing houses and buildings to which no farmlands are attached. (b) Land tax (if not redeemed) and drainage rate when charged by a public body in respect of draining, fencing, or embanking. (c) Tithe rent charge may be deducted in all cases in which the owner of the rent charge has been assessed under Schedule A in respect of it.

*Schedule B.*—The duty under Schedule B is charged in respect of the occupation of agricultural land, including houses and buildings let with the farm; it does not include private dwelling-houses or houses used for business purposes. The profits arising "from the occupation of lands, tenements, hereditaments, and heritages chargeable under Schedule B of the Income Tax Act, 1853," were until last year supposed to be equal to one-third of the rent or annual value of the land so occupied, but by the Finance Act (No. 2), 1915, the assessments are now increased to an amount equal to the full rent and tithe rent charge (if any) in addition.

A person liable to pay income-tax under Schedule B, whether as owner or occupier, may show that his profits during the year fall short "of the said annual value thereof," and in such case the income arising from the occupation shall be taken at the actual amount of such profits, and, if the whole of the income-tax has been paid, the amount overpaid shall be repaid.

The fact that he is also entitled to an abatement in proportion to the amount of his total income must also be taken into account in correctly assessing an occupier of land.

*Schedule D* extends to every description of property or profits which are not charged under any of the preceding Schedules, and it forms a greater source of revenue than any of the others.

The profits under Schedule D are divided into six classes: (1) Profits of trade, (2) profits of professions, (3) profits of uncertain annual value, (4) foreign securities, (5) foreign possessions, (6) profits not otherwise charged.

The profits of a trade or profession must be calculated upon a fair average of three years. The taxpayer may claim to be assessed upon the average of three years past, rather than upon the one year in question, the profits of which may have been exceptionally increased.

The following outgoings may be claimed as deductions: (1) Repairs to trade premises or to implements, utensils, or articles employed for the purpose



of such trade or profession. (2) Wear and tear of machinery and plant may be allowed as a deduction if the Local Commissioners think fair. (3) Bad debts. When a deduction is claimed for these a proper balance-sheet is required. (4) Two-thirds of rent of residence. Such a sum as the Commissioners allow, but not exceeding two-thirds part of the actual rent, and not exceeding the assessment of the premises to Income Tax Schedule A. (5) Life insurance premiums, subject to certain reasonable restrictions.

*Exemptions.*—Colleges and halls in Universities, hospitals, public schools, almshouses, literary and scientific institutions, the rents of lands vested in trustees and applied for charitable purposes, friendly societies and trade union provident benefit funds, are exempt from payment of income-tax, and no payment is to be made in respect of assize courts, county police stations, offices and accommodation for constables, upon the ground that they are required for the service of the Crown.

Any person whose total income does not amount to £130 is exempt from the payment of income-tax (as well as land tax), and may secure its return during a period not exceeding three years, should it have been already paid by the person from which he receives the income.

A landowner having property in hand upon which he is able to make no profit may obtain exemption or remission of the tax, in respect both of the landlord's portion (under Schedule A) and the occupier's portion (under Schedule B).

*Abatements.*—Rebates are allowed upon the smaller incomes as follows:—

Income of £300 to £400, abatement...	£120
Income of £500 to £600, abatement...	100
Income of £700, abatement .....	70

*Married Woman's Income.*—The income of a married woman, living with her husband, is deemed by the Income Tax Acts to be his income, and particulars thereof must be included in any statement rendered by him for the purposes of a claim to exemption or abatement. The only exception to this rule is where a wife earns an income independently of her husband by the exercise of her own personal labour, and the joint income of husband and wife does not exceed £500. The profit so earned by the wife may be treated as a separate income, and a separate claim for exemption or abatement may be made in respect thereof.

*Earned Income.*—By the Finance Act, 1907, as modified by the Act of 1916, any taxpayer whose total income does not exceed £2,500 may claim (before September 30 in the year for which the tax is charged) a reduction of duty in respect of so much of his income as is "earned," and in the same way any person whose total income does not exceed £2,000, even if all of it is unearned, may claim a reduction upon the scale named in the Act of 1916.

Where relief in respect of "earned" income is claimed and relief is also claimed for an "abatement" under previous Acts, "or an allowance for life insurance premiums," the relief in respect of earned income is restricted to such earned income (if any) as remains after deducting the allowances for abatement and life insurance.

*Appeals.*—No fee is payable upon the examination of the assessment list. Any person considering himself over assessed may appeal, personally or by his representative, before the Commissioners, but no appeal can be heard until the assessment has been signed and sealed by the Commissioners. The only notice which need be given of the times and places at which the Commissioners will attend for the purpose of hearing appeals is by notice affixed for, fourteen

days to the door of the parish church or other public place in the parish; but the usual procedure after a copy of the assessments has been delivered to the assessor, is to deliver to each person charged a statement of the amount of assessment with a note of the day and time of appeal.

Any person considering himself aggrieved must give ten days' notice of objection in writing to the surveyor.

An applicant may be represented by his solicitor or agent at the hearing.

The decision of the Commissioners is final, though in certain circumstances the appellant or the surveyor may call upon the Commissioners to state a case for the High Court upon a point of law. A claim for repayment of the income-tax can only be admitted within the time prescribed; this varies in some instances, but, as a rule, a claim must be made not later than three years next after the year of assessment to which the claim relates.

*Deduction of Income-tax from Rent Charges, etc.*—In paying all charges, such as mortgage interest, interest on loans, fee farm rents, rent charges (not tithe rent charges), as well as annuities, pensions, etc., arising out of property upon which income-tax has been paid, a deduction should be made for that tax calculated at the current rate for the period in respect of which the payment is made.

In this way only can a fair division of the burden be made between the various persons receiving the income; deductions from the original assessments are never made by the assessors in respect of these charges upon the property.

*Allowance for Repairs.*—As already stated, the statutory deductions for repairs from the gross assessment to income-tax are: (1) Lands (inclusive of farmhouse and buildings), one-eighth of the full annual value. (2) Houses and buildings, one-sixth of the full annual value. But where the cost of maintenance, repairs, insurance, and management, according to the average of the preceding five years, of lands (inclusive of farmhouses, etc.), and of houses not exceeding £12 annual value, exceeds the statutory allowance for repairs as above, a further allowance may be claimed by the owner by way of repayment. This recent provision has proved a very important alleviation of the income-tax burden upon country properties, and one can only be surprised that so few claims for repayment have hitherto been made; probably the full force of it has hardly been recognised as yet.

## INCREASE IN THE PRICE OF THE JOURNAL.

WITH this issue the price of the Journal is raised from 2d. to 4d. We have already set forth at length the reasons for this change, but in case there may be some readers who did not see our announcement we may here state, very briefly, that for years past we have been giving a 4d. paper for 2d., and would have continued to do so but for the War; that the price of paper has increased to three times what it was before the War, while illustration blocks have similarly advanced in price, as well, too, as the printing and publishing charges. We have felt it to be both proper and essential, therefore, to increase the price of the Journal itself. Even this enhanced price will not cover the additional and constantly increasing cost of production. We are sure our readers will readily appreciate these reasons, and we look confidently to them to continue that large support which the Journal has hitherto enjoyed.



## A FORGOTTEN TOWN-PLANNING SCHEME FOR WESTMINSTER.

IT is not commonly known that the Victoria Street (Westminster) of to-day is merely a small modified section of an important town-planning scheme which more or less covered the whole area between the south side of St. James's Park and what is now Victoria Street, which street was intended to be carried from the Broad Sanctuary to "the Chelsea Road" (Buckingham Palace Road), and thence round the back of Buckingham Palace Gardens on the site of Grosvenor Place to Hyde Park Corner.

Though from a modern town-planning point of view open to many criticisms, and though it is, or rather was, lacking in architectural merit, the scheme embodied a distinctly magnificent and ambitious conception, and, if carried out in its entirety, would have given us an area of fine "garden" streets or "squares" with vistas from Victoria Street into St. James's Park, instead of the network of dull mean streets which exists to-day.

The main principles of the scheme, as will be seen by reference to the accompanying plan, were to carry a street 90 ft. wide from Broad Sanctuary to Lower Grosvenor Place, and to form three "squares," each 900 ft. long by 240 ft. wide, reaching from Victoria Street to St. James's Park, flanked on either side by residential buildings. The scheme was devised by Mr. Rigby Wason, M.P., who was Chairman of the Select Committee appointed in 1832 "to inquire into the most economical and eligible mode of improving the approaches to the Houses of Parliament and to the Courts of Law, and also of improving the immediate neighbourhood of Buckingham Palace."

The findings of the committee, which were highly favourable, incidentally throw a lurid light on the sanitary condition of Westminster at that time. "Upon this subject your committee request the most serious consideration of the House and of the Government, to a Report made on December 6 last, . . . which leaves no doubt of the deplorable state of this part of the metropolis, with regard to the want of any effectual sewerage, and the dreadful results which must inevitably occur from the pestilential and unwholesome state of the atmosphere in that neighbourhood."

In a report dealing at some length with the insanitary condition of the area, the chairman states that in York Street and a part of St. James's Street, through which the direct way from Westminster Abbey to Buckingham Palace lies, "there is no common sewer; the privies are therefore disgorged into cesspools which receive also the refuse water of the houses, and the mixture is thence pumped or carried into the street; occasionally this refuse water collects for a length of time in small drains or wells which also communicate, more or less, with the cesspools, becoming very offensive and the subject of general complaint. . . .

"In Rochester Row, etc. . . . the stagnant ditches appear to be the universal receptacles, and from these, in favourable states of atmosphere, there can be little doubt but that miasms of the most deleterious nature issue; . . . the fluids which soak out of and through large dung heaps, where horses and cows are kept, the scite [*sic*] of which happens to be low, either stagnate on the surrounding surface, or are carried out in soils to be added to the other noisome contents of the open street gutters; unmixed soil, in fact, has been observed stagnating in ruinous and badly constructed drains, open for many feet together, to be at length absorbed by the surrounding earth, or to find its way into the adjacent cellars."

How little importance was attached to the

architectural aspect of this imposing scheme is indicated by the evidence of Mr. William Bardwell, the architect who prepared the plan and drawing, which consists of six questions:—

"75. You are an architect and surveyor?—Yes.

"76. Have you examined carefully the ground from Westminster Abbey to the Chelsea Road?—I have, the ground and buildings.

"77. Have you examined the whole of the ground, and the condition of the buildings on the proposed line of street, from Westminster Abbey to the Chelsea Road?—I have.

"78. Have you made an estimate of the probable cost of effecting this improvement, including the price of the land and the compensation to the tenants?—I have.

"79. What is the calculation? What does it amount to?—£122,500.

"80. Are you of opinion that the cost of effecting this street could not possibly exceed £150,000?—Decidedly; I am of opinion that it would not exceed £150,000."

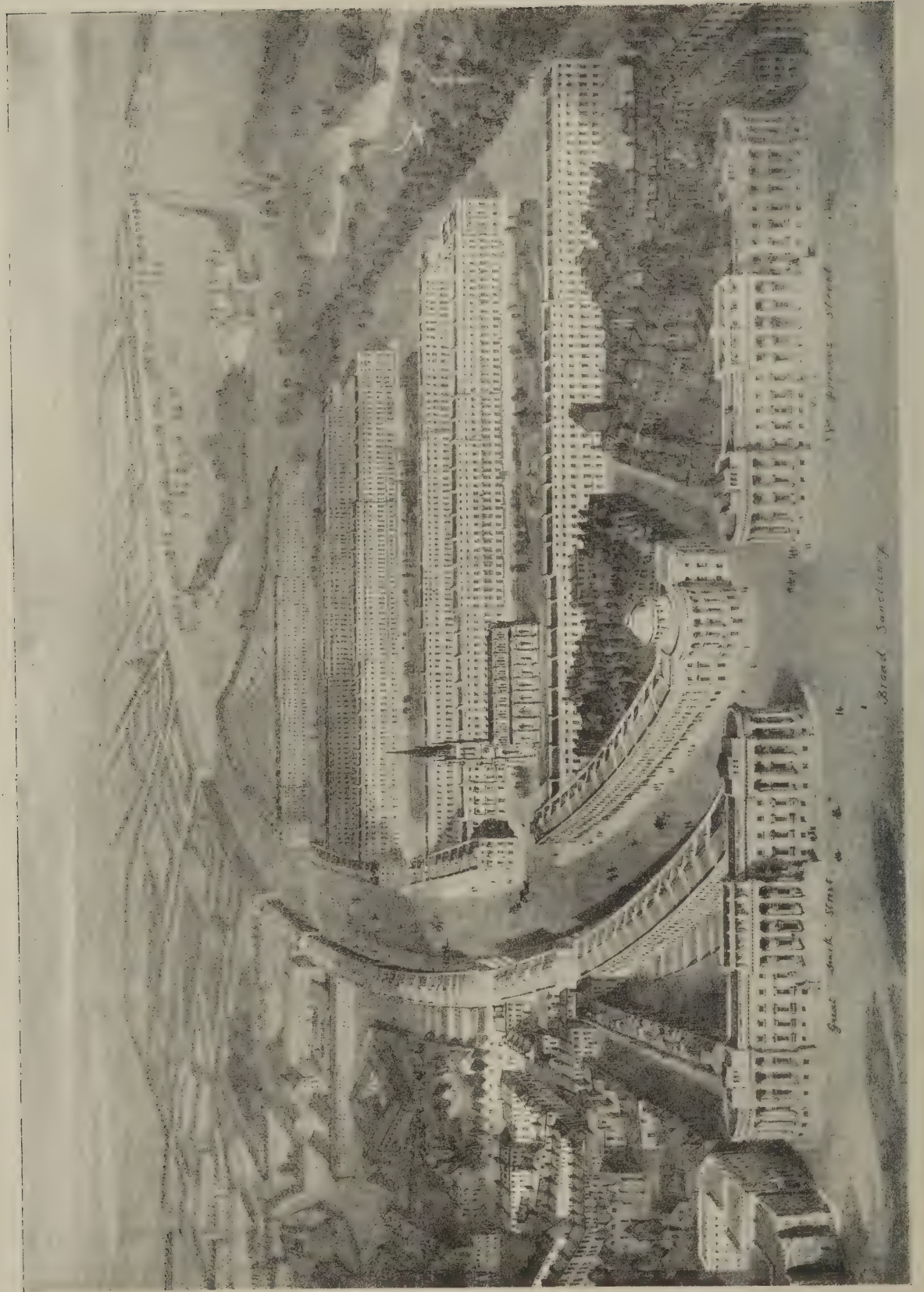
The width proposed for the new street was 90 ft. This width was ultimately reduced in the portion that was carried out to between 75 ft. and 80 ft., a width which undoubtedly was, and has proved itself to be, too narrow. The Commissioners were, in fact, advised to make the street 120 ft. wide. Mr. Thomas Cubitt (no doubt a member of the well-known firm) gave evidence before the Committee, and stated, in reference to the value of ground rents: "I should think myself it would be of much more value if the street was wide. If it was my land and I was going to operate upon it as a speculation, I should give 120 ft." Incidentally Mr. Cubitt valued the market price of the land, if the scheme were carried out as designed, at £3 to £4 per foot.

The termination at the Westminster end of the new street does not appear to have contemplated anything in the way of a view or vista of the Abbey, and the opportunity of a really effective treatment of Broad Sanctuary was lost then and lost for ever. The hopeless and improper chaos of architecture around Broad Sanctuary, though locally redeemed by the removal of the Aquarium, is still a distressing blot on London's civic architecture. The long barrack-like lines of the suggested buildings (intended as residences for Members of Parliament, etc.) between Victoria Street and St. James's Park, relieved by a highly Gothic church, would, if carried out, as no doubt they would have been, in the Victoria Street style of architecture, have been stiff and uninteresting, and the absence of any communication between the "squares" and St. James's Park, except for pedestrians, would have been an inconvenient defect.

But the scheme was doomed to failure, except so far as Victoria Street of to-day is concerned, and this can by no means be called a success. This failure was due to the resolution of the Government to construct the Wellington Barracks in the Birdcage Walk, notwithstanding the urgent appeal of the Committee: "Your Committee having been informed that it is the intention of the Government to propose to the House the erection of barracks in the Birdcage Walk, consider it to be their duty to state to the House their deliberate opinion, that if such intention be persisted in, it will be impossible to improve the neighbourhood of Buckingham Palace without a much greater expenditure of public money than is contemplated in the plan now under the consideration of your Committee.

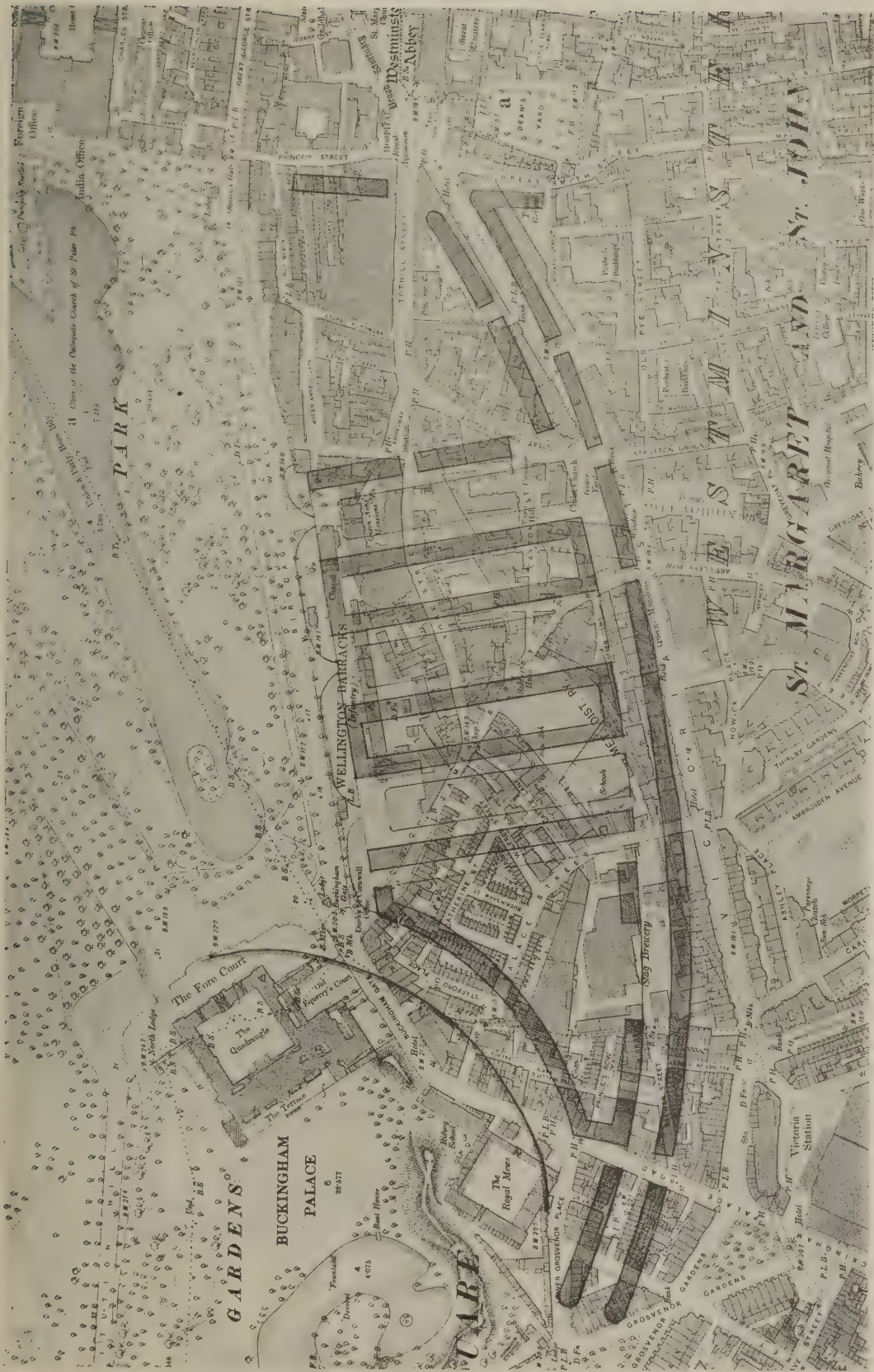
"Your Committee have less reluctance in





Bird's-eye View of the Projected Scheme.





Portion of Ordnance Survey showing 1832 Scheme in Relation to Victoria Street.

A FORGOTTEN TOWN-PLANNING SCHEME FOR WESTMINSTER,

(See article on page 7.)



expressing this opinion, as it appears to them that it would be very easy to find a situation for the barracks in every respect as advantageous as the one proposed in the Birdcage Walk."

But the decision of the Government was final, and as there were probably no persons or bodies sufficiently interested at that time in the development of London to defend the scheme, the chance of effecting a fine improvement at a comparatively small cost was, for no apparently adequate reason, thrown away, and the fine opportunity which this scheme afforded of bringing St. James's Park into close touch with Victoria Street was irretrievably lost by the erection of the barracks, which, as the Committee state, might perfectly well have been situated somewhere else.

## THE PLATES.

### *Hanover Chapel, Regent Street, London.*

AT the upper end of Regent Street, on the west side, stood Hanover Chapel, one of Cockerell's early works. The chapel was consecrated in 1825. It was among the first to suffer in the rebuilding of the street, having been pulled down about fifteen years ago to make way for a huge business pile, Regent House. The illustration on this page shows the architect's original scheme. The building was carried out closely in accordance with this, but on reference to the plate showing the executed work it will be seen that the carved enrichment which Cockerell suggested for the pediment was omitted—possibly on account of restrictions on the cost of the building, though there can be no question that the pediment would have gained considerably from the embellishment. In designing the building the architect was confronted with the difficulty that the entrance had to be at the east end, and therefore behind the altar; moreover, the floor space was so limited that two tiers of galleries were necessary. Both these problems were very successfully solved,

but the imposition of galleries in the scheme was bound to detract from the effect of the interior. The exterior, however, is clearly a very scholarly and beautiful piece of composition. The Order of the tetrastyle Ionic portico is based on that of the Temple of Minerva at Priene, while the square towers on either side are similar to those adopted by Hittorff for his almost contemporary church of SS. Vincent and Paul in Paris. The plan follows St. Stephen's, Walbrook.

### *An American Country House.*

Mr. Aymar Embury II. has carried out a number of houses similar in character to the one at Southampton, Long Island, which we now illustrate, and we think it will be agreed that he has evolved a most excellent type, based on a study of old Colonial and Dutch work in America. This is a type of house which, in our opinion, is far superior to the hybrid stuff which too often passes as "English domestic architecture," and we put forward this model as a better one to follow than the "garden city" model so extensively favoured.

### *Staircase Balustrade, No. 5, Bloomsbury Square, London, W.C.*

No. 5, Bloomsbury Square was erected in the mid-eighteenth century from designs by Isaac Ware. It has a very elegant little entrance-hall, about 14 ft. square, with a stone stair rising to the first floor. The steps are moulded at the ends to a spandrel-like shape, and each carries a fine piece of wrought-iron work by way of baluster, supporting the handrail. The smith, whoever he was, seems to have retained some of the inspiration of Tijou in the manipulation of the delicate iron foliage and rosettes.

### *English Church at Bucarest.*

This has a special interest just now, in view of the fact that our Ally's capital is in the hands of the enemy. The church was designed by Professor Beresford Pite some years ago, and is now practically completed. The drawings are self-explanatory.



COCKERELL'S ORIGINAL DESIGN FOR HANOVER CHAPEL, REGENT STREET, LONDON.





MONUMENTAL ARCHITECTURE (SERIES II.). IV.—HANOVER CHAPEL, REGENT STREET, LONDON (NO LONGER EXISTING).

C. R. COCKERELL, ARCHITECT.



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MODERN AMERICAN ARCHITECTURE (SERIES II.). XXIII.—HOUSE AT SOUTHAMPTON, LONG ISLAND, NEW YORK.  
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DETAILS OF CRAFTSMANSHIP (SERIES II.) XVIII. — WROUGHT-IRON BALUSTRADE, No. 5, BLOOMSBURY SQUARE,  
LONDON, W.C



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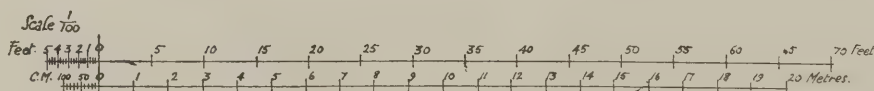


Note. Boundary wall not shown.

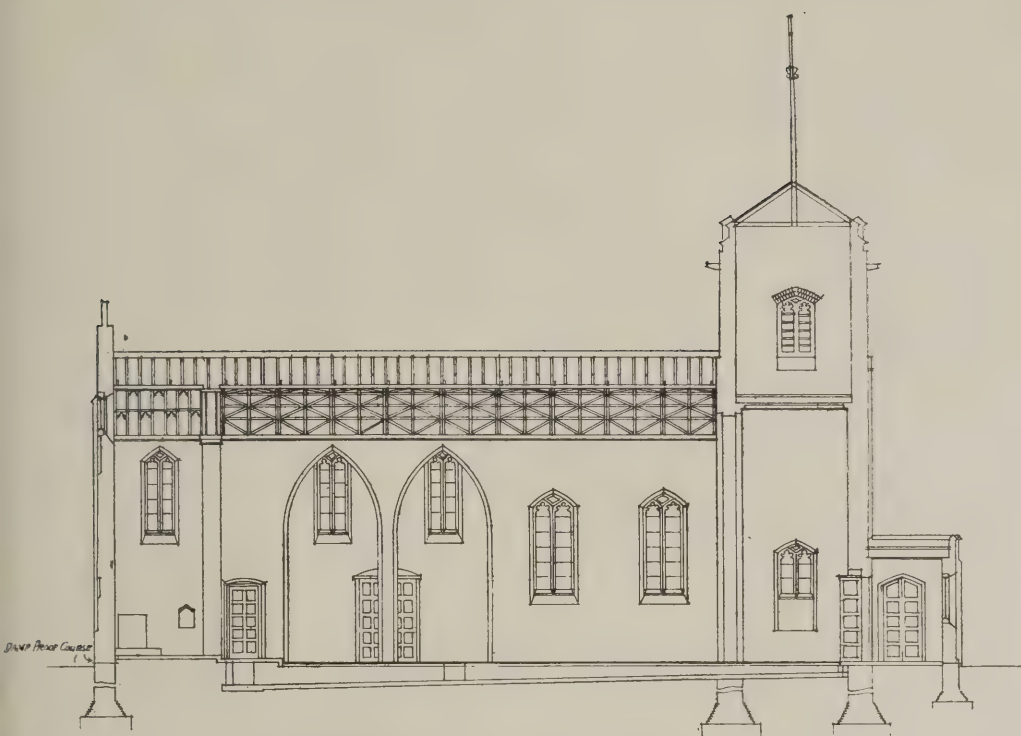
WEST ELEVATION.



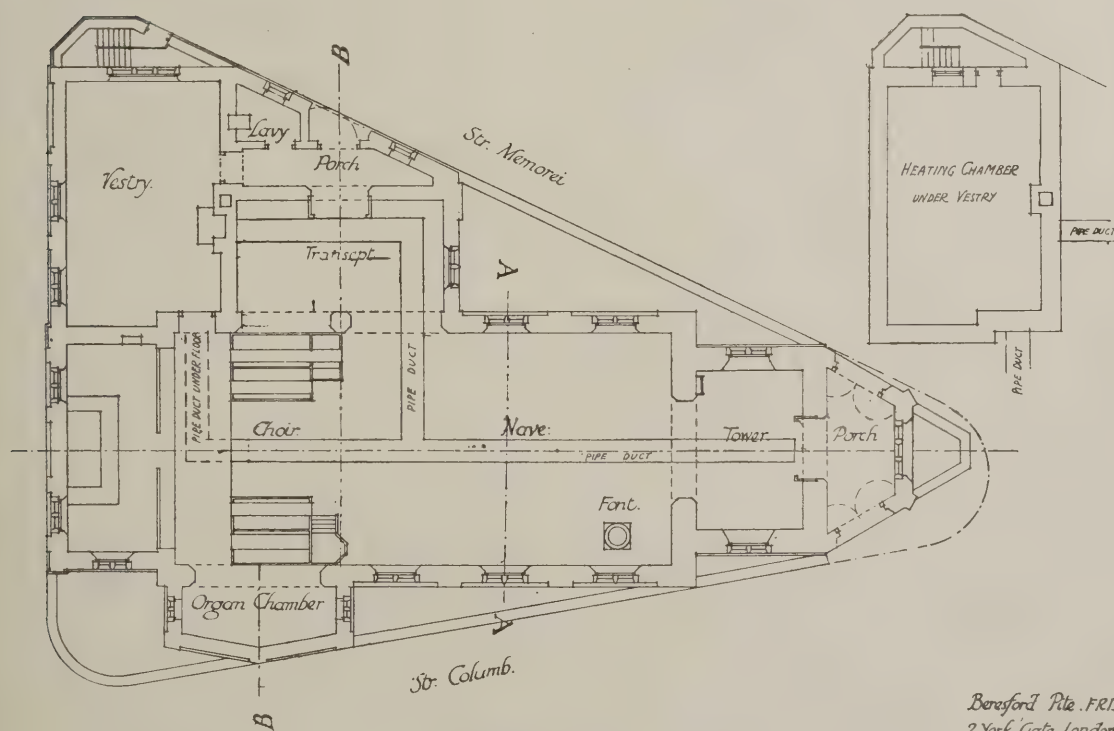
SOUTH ELEVATION.





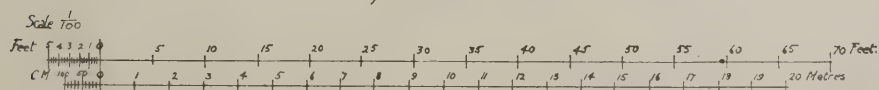


SECTION LOOKING SOUTH.



GROUND PLAN.

Beresford Pte. FRIDA  
2 York Gate, London N.W.



—ENGLISH CHURCH, BUCAREST, ROUMANIA.

.R.I.B.A., ARCHITECT.

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## REBUILDING DUBLIN.

In the House of Commons on December 18 the Dublin Reconstruction (Emergency Provisions) Bill passed its third reading, after a debate in which important amendments were accepted.

*Valuation of Injured Property.*

Mr. Clancy proposed that "No hereditament or tenement upon which was built any building or house damaged or destroyed, nor any such building or house when rebuilt or restored, shall be liable to be valued under the Irish Valuation Acts at a sum larger than the valuation in force on the first day of April, 1916, for a period of thirty years from the passing of this Act." Briefly, the argument in favour of this clause was, in the words of Alderman Byrne, that "it would be very unfair to compel a man to erect a better class of building than he had previous to the rebellion, and then make him pay an extra £50 or £100 a year because it was desired to have lovely buildings erected in Dublin." Mr. Duke accepted the clause, but proposed and carried the alteration of the period of thirty years to twelve years, and the omission of the words "damaged or" and the words "or restored" (see the third, fourth, and fifth lines of the clause).

*Licence to Build.*

Mr. Nugent moved: "Notwithstanding any order issued by the Minister of Munitions under Regulation 8 (E) of the Defence of the Realm (Consolidation) Regulation, 1914, it shall not be necessary for any person to obtain a licence from the Minister of Munitions to commence or carry on any building or construction work for the purpose of the reconstruction, rebuilding, or restoration of any building or structures destroyed or damaged as in this Act mentioned." Mr. Nugent said he thought the House would at once agree that there was an absolute necessity for the carrying of this amendment. The property which was destroyed was in the centre of Dublin. There was no provision made to compensate the people there for loss of trade and profit. Every day that passes the losses of the people increase. This was a special circumstance, and he trusted the Government would accept the amendment or make adequate provision by which the work of rebuilding might be facilitated.

Mr. Duke said the difficulty of accepting the clause as it stood was the position in which it placed the Minister of Munitions. That Minister was in favour of the meritorious object sought. He had communicated with the Minister of Munitions, who fully appreciated what was asked, and he was authorised by Mr. Addison to say that every means which could be taken to see that the steel which was required for building, and which would not interfere with that required for the purposes of the war, should be sent as speedily as possible for rebuilding purposes. There were classes of steel useful for building which were not under requisition, and if proper care was taken by those having contracts, and they would work in concert with the munitions representative, he did not think there would be much difficulty in proceeding with the work.

Mr. Timothy Healy asked whether the Chief Secretary would see that shipping facilities were given in order that the material might be sent to Dublin.

Mr. Duke said, having regard to the prior claims on shipping at the present time, he could not go beyond the promise made by the Minister of Munitions, but

every means would be taken in his own Department to see that every facility possible was given.

Mr. Nugent, in view of what the Chief Secretary had said, withdrew the clause.

*Land Court Machinery.*

Mr. Duke moved the omission of words in order to insert the following:—

(7) The Land Judge shall have power to apportion the liability for any charge or encumbrance which affects any other lands or interests as well as the interest charged or proposed to be charged under the section, and to provide for such contribution as between the lands and interests liable and such adjustments of rights and liabilities (including indemnities) in relation to the common liability as appear to him to be equitable.

(8) For the purposes of this section the Land Judge, in addition to his powers and jurisdiction as Land Judge, shall have and may exercise all such powers and jurisdiction as are vested in or exercisable by the High Court or any Division Court or Judge thereof under any enactments or rules which are applied for the purposes aforesaid by rules made under this section.

(9) The Land Judge may review, rescind, or vary any order made under this section, but no such order shall be subject to appeal and no proceedings before the Land Judge under this section shall be removed into or restrained or questioned by any Court.

(10) The Judicial Commissioner or any other Judge of the Supreme Court who may be nominated in that behalf by the Lord Chancellor, and so consents, may, during the absence of the Land Judge through illness or any other cause, act as Land Judge for the purposes of this section, and whilst so acting shall have, and may exercise, all the powers and jurisdiction of the Land Judge. For those purposes arrangements may be made between the Land Judge and the Judicial Commissioner for the performance by officers of the Land Commission in cases of urgency or any duties under this section which may be directed by the Land Judge, and those duties shall be performed by those officers accordingly.

(11) The Land Judge may make rules for putting the foregoing provisions to this section into effect, and may by any such rules regulate the practice and procedure under this section (including costs), and for that purpose may adapt any enactments or rules regulating practice and procedure in the High Court or any Division or Court thereof.

(12) For enforcing a charging order made under this section the Corporation, in addition to any other powers and remedies in that behalf, shall have and may exercise all the powers and remedies which are conferred on mortgages by the Conveyancing Acts 1881 and 1911, and those Acts shall apply accordingly.

Mr. Duke said the object of the change was to improve the machinery, of which the learned Judge of the Land Court had been so good as to take charge. He had undertaken the difficult task of distributing the burdens which arose in respect of loans contemplated under this Bill.

The clause was agreed to, together with a further clause moved by Mr. Brady, at the instance of the Incorporated Law Society, imposing on the Corporation the duty of keeping a special register of all charging orders under the section.

Mr. Duke also accepted an amendment enabling the Corporation to acquire land for street widening.

## THE NEED FOR TOWN PLANNING.

"Town Planning" formed the subject of a "talk" by Mr. Sidney A. Kelly, F.S.I., at a recent weekly luncheon of the Rotary Club, Liverpool. Mr. J. E. Lloyd Barnes, the president, occupied the chair, and on behalf of the members extended their congratulations to Mr. Kelly on the success achieved by him, in collaboration with Professor Abercrombie, in securing the premier award for designs in a competition, open to the world, for the re-planning of Dublin.

Mr. Kelly explained that town planning was by no means a new idea, for towns were laid out on definite lines thousands of years ago. In some cases it was the rectangular or gridiron plan that was adopted, showing that economy was exercised both in the construction of the roads and in the alignment of the buildings. Here in England they had many towns laid out on a definite plan during the Roman occupation, principally for military reasons. But since the Romans left this country towns had almost without exception been laid out without any preconceived plan of development and with little consideration of the individual needs of the citizens. The larger towns had annexed suburb after suburb and become cities, and the villages had added parish after parish and become towns. On the other hand, trade had increased by leaps and bounds, and with trade traffic. If it had not been for the advent of motor road vehicles the congestion of goods traffic on the railways would have amounted to a national misfortune. All this, he contended, was due to the lack of a definite plan, to which also was attributable the fact that Liverpool to-day was required to pay for widening of streets constructed seventy or one hundred years ago at the rate of £250,000 for a quarter of a mile. The adoption of town planning methods, he admitted, was costly in a city like Liverpool, but why, he asked, should there not be a wide street connecting the cathedral in Upper Duke Street with Castle Street and thus providing a way for civic processions from the Town Hall? But while town planning operations were limited in a city much good could be done by pursuing them in the country. There was no doubt that town planning on proper lines would lead to better housing and the better provision of open spaces and amenities for those who were fortunate enough to dwell outside the immediate area of the city.

Mr. Arnold Thornely, in the course of the subsequent discussion, endorsed Mr. Kelly's views, and said there were hundreds of first-class buildings in Liverpool hidden away in narrow streets. The Town Hall was a crying example of a misplaced building. Liverpool was simply full of dreadful mistakes. The railway stations were as badly situated as any in the kingdom, while the landing stage instead of being the front door of the city was, in its present condition, worse than any back door.

Mr. Kelly, in acknowledging the thanks of the club tendered to him by the president, expressed the hope that the space at the Pierhead would be developed in keeping with the splendid designs of the buildings erected there, and where, he suggested, Liverpool's war memorial could be placed. He also advocated the construction of fine open spaces before the railway stations as in Continental and American cities, whereas, as a rule, the approaches to British stations are curiously mean and inadequate.



# CONCRETE AND STEEL SECTION

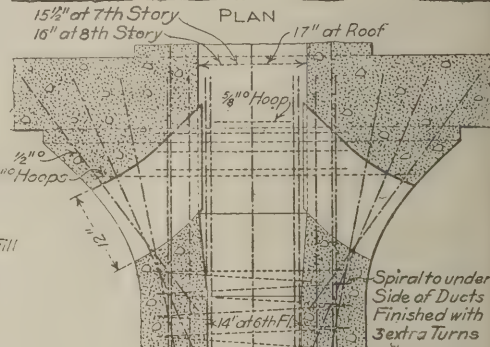
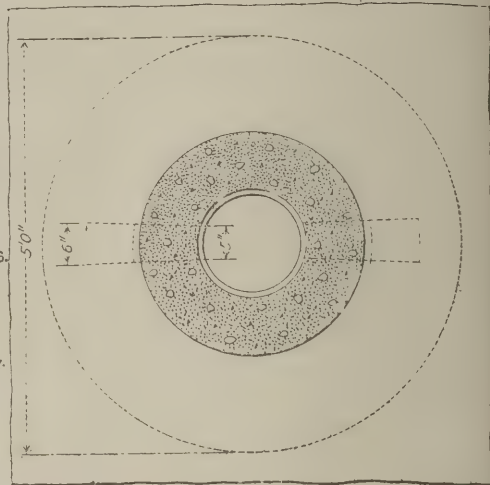
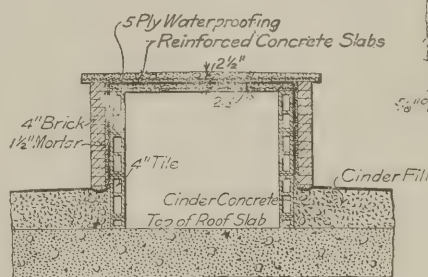
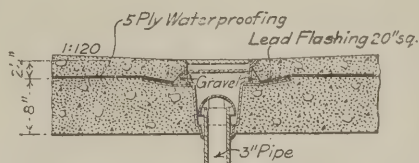
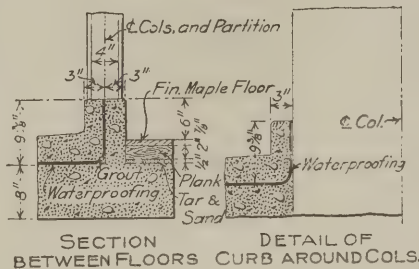
(MONTHLY.)

## NEW TREATMENT OF COLUMNS AND FLOORS IN REINFORCED CONCRETE.

An example of the advantageous use of hollow columns of reinforced concrete is Cluett, Peabody and Co.'s new building at Troy, N.Y., now in course of construction. Instead of having cast-iron duct outlets, the columns are cast with the desired curved openings near the ceiling, and additional steel reinforcement is placed around these openings. Another unusual feature of this structure is the waterproofing of parts of the two upper floors to provide drainage facilities where collars are starched after washing. Double-glazed windows are furnished in order better to insulate the building.

The new main manufacturing building is eight storeys high, with basement, adjoining the present six-storey building on the north. The plan consists of a rectangular portion 100 ft. by 175 ft., with a projecting wing on the south side two bays wide and over five bays long. The bays are nearly equal in the two directions, forming floor slabs 20 ft. by 22 ft. in size. The building is located at the intersection of Hutton Street and the Hudson River. As the street slopes downwards towards the river on a steep grade, a retaining wall for the earth backfill was necessary. This was designed as a vertical 12 in. slab between the floors, using  $\frac{3}{4}$  in. vertical reinforcing rods on 6 in. centres, with  $\frac{1}{2}$  in. temperature rods placed horizontally above the grade line on the outside. The basement, in which is stored coal for winter use, is often flooded when the river rises.

The typical floor slab is 8 in. thick, reinforced by  $\frac{1}{2}$  in. rods in two directions. Upon the rough slab is placed a levelling coat of tar  $\frac{1}{2}$  in. thick, then a 2 in. layer of spruce plank faced one side and the wearing surface of  $\frac{7}{8}$  in. matched maple flooring, after treating the plank under-flooring with creosote oil. The two lower floors were designed for 150 lb. per square foot live load, and the upper floor for 100 lb. At heavy machines the slab was increased to 10 $\frac{1}{2}$  in. thickness and reinforcement added.



TYPICAL COLUMN AND ROOF DUCTS AND DETAILS OF WATERPROOFED FLOORS.

Parts of the seventh and eighth floors are waterproofed by 5-ply felt and pitch, with special curb details at edges and around columns. Floor drains, one in each panel, are central in one direction and about 6 ft. from the line between columns in the other direction. Tests of these floors showed absolutely watertight construction.

As the part of the building first completed contains no elevators, it was decided to furnish temporary service by constructing a shaft of timber framing on

the outside, covered with galvanised iron on wooden sheathing. A sprinkler system of the dry-pipe type is installed.

The main columns are hollow, reinforced by vertical rods and outer spiral steel, with the spirals stopping at the duct outlets. Special rod reinforcement is provided around these openings, which are formed by the use of properly shaped curved boxes, inserted before placing the concrete in the column forms. The forms were of steel inside and outside, the inner form remaining permanently in place of a duct lining. A blower system of ventilation is used, the column ducts being connected at the roof to roof ducts which converge in the pent-house on the wing where the fans are located. These roof ducts are carefully waterproofed.

As it is essential in a factory of this kind to exclude all dust, not only washed air for the ventilating system but double-glazed windows have been used. On the outside  $\frac{1}{4}$  in. ribbed wire glass and in the inside  $\frac{1}{8}$  in. ribbed glass are used in the steel sash.

The building was designed and constructed by Westinghouse Church Kerr and Company, engineers and constructors, New York City. Mr. H. H. Forsyth was engineer in charge, and Mr. D. Tattie was superintendent of construction.

As factory design is now receiving particular attention in our own country, this ingenious adaptation of columns will be noted with special interest.



VIEW OF FINISHED FLOOR SHOWING DUCT OPENINGS IN COLUMNS.



## A SPECIFICATION FOR STRUCTURAL STEELWORK.

In an issue of the "Engineering Record," of New York, just to hand is an article on the suggested specification for steelwork which, while having particular reference to American practice, may very profitably be studied in connection with our own work. We therefore consider it of value to reprint here. The writer, Mr. R. Fleming, says that while it is possible to present a form which can be used as a guide in writing specifications for the structural steelwork of buildings, it is not practicable to draw up a specification that will apply to all cases. Modifications should be made to suit the specific building under consideration. For instance, a few lines headed "Description" should be given in place of the "Classification" included in the specifications here proposed. For an office building, that which relates solely to mill buildings should be omitted, and vice versa; in fact, all that is irrelevant to the particular building in question should be left out.

The terms of payment, dates of delivery, and method of settling questions arising between purchaser and contractor belong to the contract proper, and need not be repeated in the specifications.

Great care should be given to the preparation of Clause 3, on "Scope of Work." This section should be clear and complete. It should be definitely stated whether tanks, tanks, elevator framing, stairs, and similar items, are included or excluded. Any special feature to be emphasised should be stated. It may seem to some that sections relating to design might be omitted in specifications for the contractor. This is often done when design drawings are furnished, but the practice is not to be commended. When making detail drawings it is an advantage to know the loads, stresses, and other data upon which the design is based. In structures of unusual importance Clauses 51 and 53, on details and workmanship, should be elaborated.

Specifications for the steelwork of buildings are seldom written without drawing upon the work of others, and the following are not exceptions. In fact, they are largely a matter of selection, with such additions and modifications as the writer deems advisable. Values have been assigned to bolts acting in tension and to countersunk and flattened rivets. The last sentence of Clause 43 meets the case of replacing the lacing of four-angle latticed columns with web plates without violating a building code because of increased slenderness ratio  $l/r$ . In Clause 7 the limits of deflection are given as  $1/24$  and  $1/32$ , instead of the usual  $1/20$  and  $1/30$ . This allows 8 in. I-floor-beams and 6 in. channel purlins for 16 ft. bays—a very common practice, regardless of specifications. Similar modifications are made throughout, the object being a set of specifications that can and must be followed.

### General Requirements.

1. Drawings—The drawings forming a part of these specifications are (giving number, maker, title, and date of each drawing).

2. Classification—For the purpose of classification buildings are divided into two classes—(1) mill buildings; (2) office buildings.

Under Class 1 are included manufacturing plants, machine shops, power houses, train and pier sheds, electric light

stations, armouries, and buildings of similar character.

Under Class 2 are included office buildings, hotels, apartment houses, stores, warehouses, places of public assembly, and buildings of similar character.

3. Scope of Work.—It is intended that these specifications and drawings cover the structural-steel work complete for the building. Cast-iron bases are included with the structural steel. The steel erector shall erect in place the steel framework on foundations furnished by others. Anchor bolts and loose lintels are to be delivered at the site, but put in place by other contractors.

### Materials to be Furnished.

4. The materials to be furnished for buildings of Class 1 include steel trusses, columns, purlins, bracing, floor framing, crane girders with rails, trolley beams, lintels, girts, framing around door and window openings, beams supporting tanks, elevator framing, stair framing, floor plates, bunker framing and steel lining, stairs and railings unless of an ornamental character, cast-iron bases, grillage beams, and anchor bolts.

The materials not furnished include ornamental iron and steelwork, mason's anchors, carpenter's anchors and irons, elevator sheave beams, switches for trolley beams, steel stacks, steel tanks, and reinforcing rods and bars for concrete.

5. The materials to be furnished for buildings of Class 2 include steel columns, cast-iron bases, rolled and cast-steel slabs, grillage beams, anchor bolts, floor framing, roof and ceiling framing, purlins, cornice supports, supports for tanks, penthouse framing, bracing, and lintels.

The materials not furnished include ornamental iron and steelwork, mason's anchors, terra-cotta anchors, carpenter's anchors and irons, stair work, elevator framing, elevator sheave beams, steel stacks, steel tanks, light shapes supporting metal ceiling lath, cast-iron sills, and similar work, and reinforcing rods and bars for concrete.

6. Rivets and bolts for fastening steel to steel (but not for connecting the work of other trades) shall be furnished by the steel contractor. Fitting-up bolts for erection are to be considered a part of the erector's equipment and need not be furnished by the steel contractor.

### Column-Footing Plan.

7. As soon as possible a column-footing plan shall be sent to the purchaser, showing the location, elevation, and dimensions of all column bases, with the location, elevation, size, and length of all anchor bolts. The loads coming upon the column footings from the columns shall also be given.

8. Crane-clearance diagrams showing the clearances assumed for travelling cranes shall be furnished the purchaser at an early date.

9. Substitution of Material.—If the contractor wishes to substitute other shapes or sizes for those called for on the drawings he may do so, subject to the approval of the engineer, provided the architectural features are maintained and proposed sections are sufficient to carry the required loads.

10. Work of Other Trades.—Holes conforming to the usual standards of fabrication shall be punched in the steel for attaching the work of other trades, provided their location is given while the working drawings are being made.

11. Working Drawings.—Working or shop drawings shall be made by the steel contractor, and prints in duplicate sent to the purchaser or his engineer for approval.

The engineer's approval of drawings shall cover general design, strength, and type of details. The engineer shall not be held responsible for the fit of work at the site. If, to expedite delivery, or for any other reason, he waives the approval of drawings the contractor will not be relieved of responsibility for errors or omissions due to neglect or oversight on his (the contractor's) part.

12. All work must conform to local or State ordinances and regulations.

### Loads for Roofs.

13. Unless governed by a local building code the following loads shall be used:

Roof trusses and columns shall be designed to carry a uniform load per square foot of exposed roof surface, applied vertically. This load includes the weight of the structure, the snow, and the wind. For spans up to and including 80 ft., and in climates corresponding to that of New York, the total minimum uniform load per square foot of roof surface for different kinds of covering shall be taken as follows:

Corrugated metal	10
Gravel or composition roofing on wood sheathing	40
Slate on boards	50
Tile on steel purlins	55
Tar and gravel on cinder concrete	60
Slate or tile on cinder concrete	65

14. For roof spans over 80 ft. the above-cited loads shall be increased 1 per cent. for every foot increase of span.

15. For roofs in climates where snow is excessive 5 to 10 lb. shall be added, and in climates where no snow is liable to occur 10 lb. may be deducted from the foregoing loads.

16. If a ceiling is carried by the lower chord, the ceiling load shall be assumed at not less than 10 lb. per square foot.

17. If shafting is carried by the lower chord, the load at the shaft shall be assumed at not less than 2,000 lb. for light shafting, 4,000 lb. for ordinary shafting, and 6,000 lb. for heavy shafting. Unless the shafting is definitely located these loads shall be considered as liable to be concentrated at any point of the lower chord.

18. In designing purlins carrying roof covering only, the loads in Clauses 13 and 15 may be decreased 5 lb. and considered normal to the roof. When the pitch of the roof is more than  $2\frac{1}{2}$  in. to 1 ft., tie rods shall be used between the purlins.

19. Special loadings, such as tanks or elevator supports above the roof and hoists or trolleys on the lower chord, shall be taken into consideration.

20. The stresses obtained from concentrated loads shall be added to those due to uniform load.

21. Flat roofs used as places of public assembly shall be considered as floors.

### Floor Loads.

22. Floors.—Floor loads consist of dead load and live load. The dead load is composed of the weight of the floor construction and of any permanent wall resting upon it. In designing floorbeams and girders for fireproof construction the dead load shall be assumed at not less than 70 lb. per square foot. Partitions of wood studding or hollow tile not more than 6 in. thick may be considered as part of the live load.

23. Buildings of Class 1 shall be designed for minimum live loads per square foot of floor area, as follows:

Mould lofts, pattern and template shops	60
Machine shops	120 to 175
Factories	120 to 250
Warehouses	200 to 500
Foundries—charging floor	300
Power houses	200

24. Provision shall be made for the support of machinery, engines, boilers, tanks,



and other concentrated loads when carried by the steel construction.

25. Stresses due to travelling cranes and machines tending to cause vibration shall be increased 25 per cent. (For hand-power cranes, impact may be taken at 10 per cent.)

26. Buildings of Class 2 shall be designed for minimum live loads per square foot of floor area as follows:

Dwelling and apartment houses	40
Hotels and offices—first floor	75
Hotels and offices—upper floors	50
School rooms and churches	75
Places of public assembly, where floors are used for drilling or dancing	100
Where not so used	50
Retail stores—ordinary	100
Public garages	100

27. Concentrated loads, such as heavy safes, special fixtures, machinery auto-trucks, shall be taken into consideration. Every steel beam in any floor used for business purposes shall be capable of sustaining a live load concentrated at its centre of not less than 4,000 lb.

#### Column Loads.

28. Columns.—Every column, post, or other vertical support, shall be of sufficient strength to carry the combined live and dead loads transmitted to it. In buildings of five or more stories in height where all the floors are not liable to be loaded at the same time it shall be permissible in designing columns to assume the live load on the floor next below the top floor at 95 per cent. of the allowable live load, on the next lower floor at 90 per cent., and on each succeeding lower floor at correspondingly decreasing percentages until 50 per cent. is reached, which reduced load shall be used for all remaining floors.

29. In calculating column loads no reduction of floor area shall be made for stair wells.

30. In proportioning columns provision shall be made for eccentric loading.

31. Wind Pressure.—All steel buildings shall be designed to carry wind pressure to the ground by steel framework.

Buildings of Class 1 not over 25 ft. to the eave line shall be designed to resist a horizontal wind pressure of 15 lb. per square foot on the sides of the building, and the corresponding normal component on the roof, according to the Duchemin formula for wind pressure on inclined surfaces,

$$p = P \frac{2 \sin A}{1 + \sin^2 A}$$

Where buildings are more than 25 ft. to the eave line the horizontal pressure shall be taken at 20 lb. per square foot and the corresponding normal component on the roof.

Buildings of Class 2 in which the height is more than three times the minimum horizontal dimension shall be designed to resist a horizontal wind pressure of 20 lb. per square foot on the sides of the building and the corresponding normal component on the roof, according to the Duchemin formula.

Only the excess of the wind stresses obtained by this paragraph over the wind stresses according to Clause 13 need be considered. In arriving at this excess, the wind included in the total uniform loads designated in Clause 13 shall be assumed at 10 lb. per square foot.

32. The normal pressure,  $p$ , in pounds per square foot on a surface inclined  $A$  degrees to the horizontal for a horizontal wind pressure,  $P$ , of 20 lb. per square foot, according to the Duchemin formula, is as follows:

$A$	$p$	$A$	$p$
5°	3.4	25°	14.4
10°	6.8	$\frac{1}{2}$ pitch	14.0
15°	9.7	30°	16.0
$\frac{1}{2}$ pitch	11.5	40°	18.2
20°	12.1	45° to 90°	20.0

33. The area of circular steel stacks subject to wind pressure shall be assumed to be 55 per cent. of the diametral area.

34. Coal bunkers shall be assumed to be surcharged when it is possible for them to be so loaded. The weight of anthracite coal shall be taken at not less than 50 lb. per cubic foot and the angle of repose assumed to be 30 degrees.

#### Allowable Unit Stresses.

35. Unless governed by a local building code, the following unit stresses in pounds per square inch of sectional area shall not be exceeded for stresses due to the combined dead and live loads together with impact:

Tension, net section rolled steel	16,000
Direct compression, rolled steel and steel castings	16,000
Bending on extreme fibres of rolled shapes, built sections, girders, and steel castings	16,000
Bending on extreme fibres of pins	24,000
Shear on shop rivets and pins	12,000
Shear on bolts and field rivets	10,000
Shear—average—on webs of plate girders and rolled beams, gross section	10,000
Bearing pressure on shop rivets and pins	24,000
Bearing on bolts and field rivets	20,000
Rivets used in tension	5,000
Bolts used in tension, net section under thread	10,000
Axial compression on gross section of columns:	
For $l/r$ from 0 to 60	13,000
For $l/r$ from 60 to 120	19,000—100 $l/r$
For $l/r$ from 120 to 160	13,000—50 $l/r$

Where  $l$  = effective length of member in inches:

$r$  = least radius of gyration of section in inches.

36. For combined stresses due to bending and direct loads, the foregoing unit stresses may be increased 20 per cent., provided the section thus obtained is not less than that required for bending or direct stress alone. For combined stresses due to wind and other loads the above-mentioned unit stresses may be increased 50 per cent., provided the section thus obtained is not less than that required if wind forces be neglected.

#### Countersunk Rivets.

37. Countersunk rivets in plates of thickness equal to or greater than one-half the diameter of rivet shall be assumed to have three-fourths the value of rivets with full heads. In plates of thickness less than one-half the diameter of rivet their values shall be taken as three-eighths that of full-headed rivets.

Rivets with flattened heads of height not less than  $\frac{3}{8}$  in., or one-half the diameter of the rivet for  $\frac{3}{8}$ -in. rivets and less, shall be assumed to have nine-tenths the value of corresponding rivets with full heads. Rivets with heads flattened to less than these heights shall be regarded as countersunk rivets.

38. The allowable pressure of column bases and bearing plates on masonry shall not exceed, in pounds per square inch, the following:

On brickwork with cement mortar	250
On brickwork with lime mortar	150
On Portland cement concrete 1:2:4 mixture	600
On Portland cement concrete 1:3:5 mixture	350
On first-class dimension sandstone or limestone	400
On first-class granite	600

#### Proportion of Parts.

39. Trusses shall preferably be riveted structures. Tension as well as compression member shall preferably be composed of rolled shapes or built-up sections. Flat bars shall not be used.

40. In calculating tension members, net sections shall be used. The diameter of rivet holes shall be assumed to be  $\frac{1}{8}$  in. larger than the nominal size of the rivet. In single angles connected by one leg, the net area of the connected leg and one-half that of the outstanding leg shall be considered effective.

41. The nominal sizes of rivets shall be used in calculations of their values.

Rivets and bolts in tension shall be avoided as far as practicable. In cases

where they cannot be avoided and the load carried are subject to shock, bolts with check nuts shall be used.

#### Reversal of Stress.

42. Members subject to reversal of stress shall be proportioned for the stress requiring the larger section, but their connections shall be proportioned for the larger stress plus one-half the smaller.

43. The effective length of main compression members shall not exceed 12 times their least radius of gyration, and for secondary members and lateral bracing, 160 times their least radius of gyration. Any portion of the cross-section of a compression member may be neglected in computing the radius of gyration, provided that portion be neglected in computing the safe load.

44. Plate girders may be proportioned upon the assumption that the bending stresses are resisted by the flanges and that the shear is resisted by the web. One-eighth of the gross area of the web may be considered to act as flange area. Plate girders may also be proportioned by their moments of inertia.

#### Crane-Load Distribution.

45. Wheel loads of cranes shall be assumed to be distributed on the top flanges of runway girders over a distance equal to the depth of the girder, with a maximum of 30 in. In addition to the vertical load, the top flanges shall be designed to resist a horizontal thrust of 20 per cent. of the lifting capacity of the crane, equally divided among the four or more wheels of the crane.

46. Plate-girder webs shall have a thickness not less than  $1/160$  of the unsupported distance between flange angles. Web stiffeners shall be used in pairs. They shall be placed over bearings, at points of concentrated loading, and at other points where  $R$  is greater than 90 or where the shearing stress per square inch is greater than that obtained from the formula  $10,000 - 50 R$ ,  $R$  being the ratio of depth of unsupported web to its thickness. They should generally be not farther apart than the depth of the unsupported web.

Stiffeners shall be designed as columns for a length equal to one-half the depth of the girder and shall have enough rivets properly to transmit the shear. When important loads are transmitted through the bearing of stiffeners, the bearing value shall be assumed at 24,000 lb. per square inch of section, excluding the area of chamfered portion over fillets of flange angles.

47. The depth of girders and rolled beams in floors shall be not less than  $1/12$  of the span, and if used as roof purlins shall be not less than  $1/32$  of the span. In cases of floors subject to shocks and vibration the depth shall be limited to  $1/16$  of the span.

48. When the laterally unsupported length,  $L$ , of the compression flange of beams and girders exceeds 15 times its width,  $b$ , the unit stress in the compression flange shall not exceed  $10,000 - 250L/b$ .

49. Steel purlins shall be single rolled shapes, plate girders or lattice girders.

50. Steel less than  $\frac{1}{4}$  in. thick shall not be used. This does not apply to fillers or to webs of rolled beams and channels. Steel subject to the action of harmful gas or severe atmospheric conditions shall be not less than  $5/16$  in. thick.

51. Details throughout shall conform to first-class standard practice.

#### Material and Workmanship.

52. Material.—Steel shall be made by the open-hearth process and shall have a



ultimate tensile strength of 56,000 to 64,000 lb. per square inch. In general, steel and cast-iron shall conform to the "Specifications for Steel Railway Bridges" adopted by the American Railway Engineering Association.

53. Workmanship. — All workmanship shall be first class in every respect and in accordance with practice followed by the best modern bridge shops.

54. Painting. — All steelwork shall be thoroughly cleaned before leaving the shop. Steelwork to be entirely embedded in concrete and cast iron shall not be painted. Other steelwork shall be given one coat of red lead and linseed oil or a graphite paint, as directed. One coat shall be given in the shop to surfaces inaccessible after assembling. Machine-finished surfaces shall be coated with white lead and tallow before shipment.

55. After erection the steelwork shall be cleaned of all dirt and rust and given one coat of graphite paint of colour or shade different from that of the shop coat.

56. All painting at shop and site shall be done by hand when the surface of the metal is perfectly dry. Painting shall not be done in freezing weather.

#### *Inspection and Erection.*

57. Inspection. — All inspection and tests shall be made at the option and expense of the purchaser.

58. If material is tested at the mills, the necessary number of test pieces and the use of a testing machine shall be furnished free of charge by the steel contractor.

59. The purchaser or his representative shall have free access at all times to the mills where material is rolled and to the shops where it is fabricated. In ample time for his needs he shall be given dates of mill and shop operations and furnished with complete working drawings.

60. Erection. — The structural steel and iron, except anchor bolts and loose lintels,

shall be erected by the steel contractor on foundations furnished by the purchaser.

61. Care shall be taken that all steelwork be level and plumb before riveting.

62. Proper provision shall be made for resisting stresses due to erection operations.

63. Field connections generally shall be riveted. Purlins and girts, except those forming part of the bracing may be bolted. Where there is little or no vibration in floors, connections 3 ft. or more from column centres may be bolted.

64. Drift pins shall be used only to bring parts together. Unfair holes shall be made to match by reaming.

65. After finishing work the erector shall remove his equipment and all rubbish resulting from his operations.

#### *"A Thousand and One Uses for Gas."*

The current issue of "A Thousand and One Uses for Gas," the monthly publication issued to the business world by the British Commercial Gas Association of 47, Victoria Street, Westminster, S.W., is the third number in a series dealing with the problems attaching to factory lighting in all its phases. The present issue chiefly discusses the prevention of glare by the use of properly shaded and distributed incandescent gas lights, and it is pointed out that the Home Office Committee on Factory and Workshop Lighting made special mention of high-pressure gas systems as a means of protection from glare, which they consider one of the defects in illumination most detrimental to the health and efficiency of the worker and therefore to the rate and quality of output. Some excellent and convincing photographs illustrate the issue, which concludes by demonstrating the necessity for legislation standardising industrial illumination in this country, especially in view of Transatlantic competition after the war.

## RACE STAND FOR THE DURBAN TURF CLUB.

BY A. O. PITT, M.C.I.

The illustration on this page shows the new racecourse stand which has been erected for the Durban Turf Club, from designs by Messrs. Street-Wilson and Paton, F.F.R.I.B.A., of Durban. The stand, which is constructed on the Kahn system, has an outer shell of brick walls with reinforced concrete decking and beams, the decking being made of 3 in. treads and 4 in. risers, the whole being tied right through from front to back by means of hooking the reinforcing rods round each other. The beams are designed to carry their load without any assistance from the decking itself. The decking was cast in two separate parts with a temperature joint of bitumen. The centreing to the side of the beams was made sufficiently strong and stout to span from wall to wall without any vertical struts and to carry the whole of the centreing to the treads and risers, thus enabling work to be carried on in the rooms underneath the decking immediately after the concrete was poured.

The stand was designed to accommodate approximately 1,100 people, and provision is made for bars, tea rooms, lavatories, etc., underneath. It is 106 ft. in length, and consists of seventeen tiers, making a width of 43 ft. on the horizontal.

The concrete work occupied approximately three weeks from the commencement of placing the centreing in position to the finishing of the pouring of the concrete, and the whole of the work, including painting, decoration, etc., and fitting, was completed in twelve weeks. This goes to show that, in the matter of time, reinforced concrete work can be erected with fair



REINFORCED CONCRETE RACE STAND AT DURBAN, SOUTH AFRICA.



competition with any other permanent methods of construction.

The cost of the whole erection, including all builders' work, was £1,997. Messrs. Estate J. R. McKinlay were the contractors.

### EXPERIMENTS ON EARTH-PRESSURE.\*

BY PONSONBY MOORE CROSTHWAITE,  
B.A.I., M.Inst.C.E.

The paper commences with a short account of Rankine's theory of earth-pressure, and the principles and assumption on which it is founded. Descriptions of former investigations are given in some detail, namely, those of the late Sir George Darwin, and Messrs. Goodrich, Wilson, Bell, and Meem. The author concludes that of the experiments made by these investigators to investigate the lateral pressure of earth, those in which model walls were used are of greatest value, but points out that if models are of any size the experimental difficulties are almost insuperable.

The author's experiments, a number of which are described and illustrated in the paper, were made by loading a plunger with known weights and measuring the penetration when the plunger had come to rest after the application of each weight. The materials were enclosed in an open bucket, and their weight was determined.

With those data the value of  $\phi$ , the angle of internal friction, can be obtained from Rankine's well-known formula for the safe depth of foundations—

$$d = \frac{P}{W} \left( \frac{1 - \sin \phi}{1 + \sin \phi} \right)^2$$

where  $d$  denotes the penetration;  $P$  the pressure in pounds per square foot; and  $W$  the weight of the material in pounds per cubic foot.

If the formula is true, and the pressures be plotted against the penetrations, the resulting curve is a straight line, and  $\phi$  as calculated from the formula should equal the angle of repose.

With sand, garden earth, and cinders and ashes the resulting curves are straight lines, but it was found that the value of  $\phi$  varied with the state of aggregation of the material, *i.e.*, whether it was lightly poured into the bucket, shaken in, or well pounded in. When the material was deposited in the bucket as lightly as possible the angle of internal friction was the same as the angle of repose, but with more consolidation the angle was much greater.

From these materials the author concludes that Rankine's theory holds, provided the proper angle of internal friction is used and not the angle of repose. If, however, this angle is used it would be necessary to introduce a factor of safety into the formula, for a wall designed without one would be theoretically just strong enough and no more. In Rankine's formula there is no factor of safety, and it is concluded that Rankine saw this, and used the angle of repose as covering the worst conditions that need possibly be provided for. The author's experiments show that, for the materials tested, work designed by Rankine's formula, using the angle of repose, would have a factor of safety of  $2\frac{1}{2}$  to 4, and he considers that these are not unreasonable figures for such materials.

The experiments on clay give altogether different results, for instead of the penetration varying as the load, it varies as the square of the load, and the penetration curves are parabolas. These results, which were altogether unexpected, are completely confirmed by larger experiments carried out by Messrs. Coode, Matthews, Fitzmaurice, and Wilson, and by Mr. McAlpine in New York.

The author is able to give no physical explanation as to why the penetration in clay should vary as the square of the load, but leaves it to the physicists. The law must be capable of some rational explanation, and, if true, it upsets all earth-pressure theories when they are applied to clay; for all accepted theories assume that the angle of internal friction is the same as the angle of repose, and that its value is independent of the pressure. It is suggested that the subject is worthy of further investigation, but that such could hardly be made by a private individual, for the work is tedious, each experiment taking from twenty-four to forty-eight hours. Moreover, if the investigation is to be properly carried out physical and chemical analyses of the clays will be required that could only be made in a well-equipped physical laboratory.

In connection with the earth slides experienced at the Panama Canal, it has been suggested that in clay and shale cuttings there is a critical depth beyond which the sides will not stand, and the author's experiments on clays clearly show that for these this must be the case. Where  $\phi$  is independent of the pressure the depth of the cutting cannot affect the stability of the slope, but where the angle decreases with the pressure it is evident that eventually a depth will be reached beyond which its sides will not stand.

This decrease is clearly shown in one experiment on mud, for which the angle for a pressure of 0.25 ton per square foot was 17 deg. 15 min., which decreased to 2 deg. 10 min. at a pressure of 1.25 ton per square foot, when it was little better than a liquid.

### BUILDING CONTRACTS AND THE WAR.

It is not generally known, says the London correspondent of the "Birmingham Daily Post," that there was submitted to the late Prime Minister before he thought of quitting office a draft Bill dealing with the hardship which has arisen in connection with building contracts entered into before hostilities began, and that Mr. Asquith promised it consideration. The Leader of the House of Commons will be invited to undertake that this matter, in view of its importance to one of the largest industries of the country, shall not be overlooked, and, considering its daily increasing urgency, that it will receive consideration at an early date. Further, he will be pressed to say whether he is aware that the restriction of the building industry, by the complete stoppage of important works partly completed and the refusal to grant licenses to build for operations involving an expenditure of more than £500, opens up many difficult and intricate questions in connection with existing contracts which have not been provided for by any alteration or amendment of the existing law; and whether, with a view to preventing or mitigating loss and hardship to those engaged in this industry, he will indicate what the Government's policy is regarding the matter.

### NEWS ITEMS.

#### *London City and Midland Bank, Manchester.*

Coatostone for the London City and Midland Bank, Manchester, is being supplied by the Coatostone Decoration Company, 9a, Little James Street, Gray's Inn, London, W.C.

#### *St. Paul's Bridge—£30,000 Purchase.*

The Corporation of London, under the powers contained in the St. Paul's Bridge Act, 1913, have acquired the freehold of the important premises, No. 27, St. Paul's Churchyard, now occupied by Messrs. Burt and Co. and Messrs. Stafford Northcote and Co. The property forms part of the London estate of the Duke of Marlborough, the price paid being just under £30,000.

#### *Helping Absent Friends.*

A surveyor appealing at the Law Society Section of the London Appeal Tribunal recently, said that, besides his own business, he was managing two others for friends who were serving at the front. Both the assistants in his own business had been taken by the Army, and he had a £20,000 contract to erect a building after the war. Applicant, who was thirty-six, married, and passed for general service, was given two months' exemption.

#### *D.S.O. for an Architect.*

Temporary Major J. Wightman Douglas, R.E., who has been awarded the D.S.O. for gallantry and devotion to duty in the field, is the second member of the Society of Architects serving in that branch of the Army to receive this distinction during the present war. Major Wightman Douglas supervised the wiring of the whole line under heavy fire, and set a splendid example of courage and determination throughout. As an architect he practises in Newcastle-on-Tyne.

#### *National Housing Scheme after the War.*

The West Riding Insurance Committee have adopted the following motion:—"That considering the lack of houses and the unsuitable character of many, from which causes many diseases, and especially tuberculosis, arise, this Insurance Committee desire to press upon the Government the urgent desirability of formulating a scheme to be put into operation immediately peace is declared, to provide better and healthier houses for the working classes of the United Kingdom, which shall include a substantial grant-in-aid."

#### *Australia in the Strand.*

The Australian Commonwealth offices in London are being transferred from the present address at 72, Victoria Street, to Australia House, in the Strand. Owing to delays caused by the war the internal fittings of the new building will not be completed throughout for some time, but the fourth, fifth, and sixth floors are now ready for occupation. As the lease of the Victoria Street premises has nearly run out the High Commissioner has decided to take possession of the upper part of the building pending the completion of the lower part. The new offices have involved a total expenditure of about three-quarters of a million sterling, more than half of which is represented by the cost of the freehold, which was purchased from the London County Council for £379,000.

\* Abstract of paper read on December 6 before the Institution of Civil Engineers.



ARTS  
Arch.

# THE ARCHITECTS' & BUILDERS' JOURNAL.

Wednesday, January 10, 1917.

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A COADE VASE.

(See article on page 21.)

# THE ARCHITECTS' & BUILDERS' JOURNAL.

JANUARY 10, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1149.

## EDITORIAL.

FROM the current issue of the quarterly organ of the National Federation of Building Trades Employers of Great Britain and Ireland, it may be gathered that the organised builders are by no means quiescent with regard to the restrictions on building. They have taken, and are taking, it would appear, every possible step towards a more rational solution of the problem with which the Government has dealt so drastically and with such disastrous effect on one of the principal industries of the country. In this great war of right against might, builders, like the rest of the community, are willing to make the utmost sacrifices that are necessary. At the same time, they are naturally anxious to obtain relief that can be given with benefit to the country rather than with injury to it, and they contend that between non-interference with building and the absolute stoppage of the industry there is a *via media* which can be and ought to be adopted. Speaking at a conference of Federation secretaries, a well-known Yorkshire secretary declared that the munition works were over-staffed and over-manned, and he held that if these men were properly used by the Government the restrictions with regard to building operations could be removed. Building contracts, he said, had been given to timber merchants, mill-sawyers, and furniture merchants—as if experienced building contractors were too scarce or too busy to undertake the work. These are matters on which the builders are justified, not in adding to the worries of a hard-worked Government, but in coming to its rescue with the expert guidance of which it is obviously in need.

\* \* \* \*

Another matter that, at the same meeting, was very legitimately broached, was the effect of pre-war contracts, which, as the president of the Federation said, the courts had held to be binding “notwithstanding whatever happened during the war.” Very appositely Mr. Wallis recalled that a year or so ago Mr. Asquith had said that the great principle to be observed by the Government in its dealing with any industries was equality of sacrifice. “That principle,” it seemed to Mr. Wallis, “as far as the building trade was concerned, had not received any application.” In point of fact, no other industry has been visited with anything like the same severity of suffering, and there can be no question that the builders are thoroughly justified in pressing for some measure of relief from this particular inequality of sacrifice. In some instances (but these seem to be few) corporations and private owners have consented to forgo the immense advantages the law allows them in the matter of pre-war contracts; but, generally, the burden of enhanced prices, and of other difficulties created by the war, has been allowed to fall on the builder, even though it

should crush him. It may be law, but is certainly not equity, that the owner gets a cheap building at the expense of the contractor. Obviously, the building is, under present and prospective conditions, worth fifty or sixty per cent. more to the owner than it would have been if the war had not enhanced prices. In effect he gains what the builder loses, and, morally speaking, is clearly not entitled to this advantage, though “the law allows it and the court awards it.” From this exasperating position the unfortunate builder has every right to demand extrication, and we are not without hope that he will get it; but the remedy must be prompt if it is to be effectual, pre-war contracts belonging to a period that now seems long remote.

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At the same meeting of secretaries, Mr. S. Wigham read a very interesting paper on the metric system of weights and measures, a subject which, it will be remembered, the Federation took up with considerable vigour at its half-yearly meeting at Brighton last July, when a resolution was passed urging the Government to adopt the system. Mr. Wigham states very ably the case for change, and brings together a mass of data that, whether or not the system is generally adopted in this country, will be found very useful with respect to the important part that British builders and merchants are bound to play in the reconstruction of the devastated areas in France and Belgium. All the speakers at the meeting were in favour of the change, but they did not all realise as clearly as the author of the paper evidently did the nature of the enormous difficulties that must be overcome. One speaker, in saying that “the first thing that would have to be done would be to break down the conservatism of the English people,” did not quite reach the root of the matter, which is grossly material rather than delicately psychological: the change would be immensely costly, and could only be effected very gradually; and, while it was going on, the existence of the two methods side by side would cause chaotic confusion, and would necessitate wholesale scrapping of valuable assets. It is not conservative sentiment, but vested interest, that so stubbornly obstructs a reform which is desirable not only on account of its superior intrinsic value, but more especially because it would bring us into closer touch with our Allies, and would remove a rather serious disqualification from which we suffer in competing for business in foreign markets. It would also effect a considerable economy of time and effort in our schools, where the differences between *avoirdupois* and *troy*, and the general heterogeneousness and inconsistencies of the weights and measures table, cloud and confuse young minds that should be better employed. Whatever may be the fate of the movement, there can be



no question that the present moment is peculiarly opportune for its acceleration, and we are glad to see builders taking the lead in it.

It is gratifying to find that the Cantor lectures for the one-hundred-and-sixty-third session of the Royal Society of Arts are upon the subject of "Town Planning and Civic Architecture." They are to be delivered by Professor Beresford Pite, F.R.I.B.A., on successive Monday afternoons, at 4.30, beginning on January 29, the fourth and concluding paper being set down for February 19. The Society is to be congratulated on both the subject and the lecturer. Professor Pite is no stranger to the fine Adam lecture-hall in John Street, Adelphi, where he has been often heard on architectural and cognate matters. Cantor lectures, which collectively form a series of considerable practical value (they are, we believe, invariably published in pamphlet form), include many courses in which some particular aspect of the building industry has been dealt with competently and more or less exhaustively—*e.g.*, Mr. A. B. Searle's lectures on "Modern Methods of Brickmaking," delivered in 1910. Although the Society was founded (in 1753) by the landscape painter William Shipley, it has steadily adhered to its policy as an institution for "the encouragement of arts, commerce, and manufactures." Nevertheless, in its earliest days it held exhibitions of pictures, and the first exhibition of the Royal Academy was held in its rooms. In 1847, however, when it obtained its charter, and secured the Prince Consort for its president, the Society entered upon the career from which it has never since greatly deviated—that of promoting the industrial application of the arts and sciences—and the International Exhibition of 1851 sprang from the small exhibitions of similar character held in the rooms of the Society. Working quietly and unobtrusively, the Royal Society of Arts has done much to promote national progress in matters within its scope, and we shall hope to see it take a prominent position in the coming industrial regeneration.

The death, in his seventy-sixth year, of Mr. S. Stevens Hellyer, recalls that the Royal Society of Arts gave him a platform on which, in 1881, on the invitation of the National Health Society, he delivered many a lusty stroke for sanitary reform. His then novel and startling propositions were at first vigorously and even bitterly opposed, but have since become commonplaces of the profession which he enriched and adorned. Not only was he completely master of his subject, but he had at command a fund of sarcastic humour that served admirably to barb the jabs against which case-hardened ignorance or crass prejudice was not proof; but though sometimes caustic he was never unkindly, and it is not surprising to hear that he was always a generous and considerate employer.

In his lecturing, Mr. Hellyer occasionally became quite eloquent, as witness this passage from a peroration: "Lying there in those strong arms of yours, lumbering in the hardened muscles, resting in the well-trained fingers and educated hands, lies the health of this leviathan city. The plumber's part in making a house, a town, a city healthy is enormous. Let the plumbing be done on the principles laid down in these lectures, and this huge city, teeming though it be with human beings, will become the healthiest, as it is now the greatest, city in the world." This well-nigh poetical plumber must have felt pretty safe in adventuring upon his semi-prophetic vision of London as the healthiest city in the world, because he must have already done very much, by precept and practice, to

bring within measurable defence the fulfilment of his own prophecy. Perhaps he was then, as certainly he was not long afterwards, at the head of the largest army of plumbers ever got together under one command. And what Chadwick, Simon, and Playfair were in theory, Hellyer was in practice—a pioneer in sanitation. He translated into terms of plumbing the hygienic ideals that scientific imagination bodied forth—"turned them to shapes, and gave to airy nothing a local habitation and a name." He trained and educated a large number of competent plumbers, not only developing in them skill of hand and an intelligent perception of principles, but imbuing them with an enthusiasm for their craft that had slumbered inert until he quickened it. If, at the present day, "the lordly plumber" has a somewhat exaggerated sense of the dignity and importance of his office, that is only because the disciple is always apt to over-accentuate the teachings of the master, and it is a fault that is more easily condoned than the want of self-respect that infests so many craftsmen.

Speaking of plumbers, it is worth while to note that Glasgow employers and operatives in this department have agreed to an extension of the winter working day from the normal eight hours to an emergency nine hours. This, of course, is one of the many readjustments brought about by the exigencies of the war; and one cannot resist the inference that the mutual concessions of which this is by no means a solitary instance must go far towards inducing a more conciliatory spirit between employer and employed, a less dogmatic insistence on the rigours of collective bargaining, and a clearer perception of the essential unity of interests that really underlies the relationship between the two parties. On the other hand, both parties must be on their guard against the possibility of violent reaction against the benign principle of give-and-take, and against any tendency on either side to take undue advantage of the situation. It is disconcerting, for example, to see that application has been made by the London Building Industries Federation for a permanent increase in wages of twopence an hour to all the operatives engaged in the London building trade. This is surely not a very ingenuous move. There should be no insistence on permanency. Concessions on either side should in common fairness be regarded as entirely temporary, and this inconsiderate demand for permanency may provoke unpleasant reprisals. At all events, it sets up a very undesirable precedent.

An endowment of £2,000 a year has been granted by the New South Wales Government for a Chair of Architecture at Sydney University; and it is claimed that this is the first occasion of a Government of the British Empire recognising the national importance of architecture. A certain twinge of envy must therefore accompany our nevertheless sincere congratulations to the Government and to the architects of New South Wales. But the example is not merely for Governments, but for those universities upon whom it has not yet dawned that architecture, broadly considered, has in it all the essentials of a liberal education. This news from New South Wales brings us much nearer to the time when any university from which a well-endowed Chair of Architecture is excluded will be regarded as being hopelessly behind the times. Particulars of the Sydney Chair are not yet available, and it will be interesting to learn whether the conditions provide for the complete absorption of the professor in scholastic work, or whether the authorities adopt the more modern view that he shall be at liberty to keep in touch with actual practice.



## HERE AND THERE.

OF the trinity of after-the-War buildings—houses for the workers, factories, and science buildings—the last have now to be dealt with, and at the very beginning we may note what was said last week by Surgeon-General Sir Alfred Keogh, who, as head of the R.A.M.C., has been responsible for the medical service of our Army for most of the time we have been at War. His actual words were: "It is a regrettable thing to find that many of our Ministers of State, and people occupying high positions, possess no knowledge whatever of the most elementary facts of science and nature. I have to work with these men and press scientific decisions upon them, and it is exceedingly difficult to get low enough to find yourself upon their level." The mere architect therefore may take heart if he feels that, in this matter of science, he knows no more than a Cabinet Minister. But he will have to deal with science masters and science committees who are thoroughly versed in their subject, and who expect their architect to be well informed as to the most efficient methods of erecting and equipping science buildings, whether these relate to "technics" or to some special branch, such as medical or surgical science. Success in all these buildings is very largely dependent on what may be called their architectural equipment.

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Frankly, it may be admitted that "technics" and matters scientific are not beloved by the average architect. But, if this country is to meet the new competition which the future surely holds, the architect will have to play his part equally with the chemist, the science master, and the technical expert. It is not sufficient to think of a laboratory or a science classroom as just an oblong apartment, with so many benches in it, and a few things which can be got from the catalogue of any apparatus maker. The architect needs to be abreast of the times, and his practice must respond to the newest thought. Surgical science buildings offer many an illustration of this, as, for example, the modern operating theatre, with its manner of lighting the table with a beam of light thrown from a mirror on to which an arc-lamp in an adjoining room focuses its ray through a glass panel in the wall, thus eliminating the bowl of lights directly over the table, which tended to collect dust and might have fatal consequences if a breakage occurred. Again, in a physics laboratory one of the walls may be so shaded by an adjustable wing-blind, or treated with tin-foil, that lantern views projected upon it are clearly visible in daylight. Or, again, there is an arrangement for lecture theatres whereby slats on webs are concealed in the cornice and can be at once wound down by a key when it is desired to exhibit diagrams of any size. There are several arrangements for displaying blackboards with great advantage; there are new ways of making laboratory benches; there are ingeniously devised acid stands with a running water supply; and a hundred and one similar details, all of which go to make for efficiency and excellence in working. Only by being thoroughly up-to-date in these matters can the architect hope to claim an honourable place with those who will make for success in science in the time to come. It is not sufficient to turn to a text-book (probably quite out-of-date) for the details, and to put these in almost resentfully, as though it were a tremendous nuisance to have to put them in at all. The details may make or mar the success of the entire scheme of a science building. The architect may have designed a most effective entrance hall, but if he puts the street doors right down to the floor, and forgets to allow for a mat sinking, his entrance hall will present a sorry spectacle on a wet day.

UBIQUE.

## THE PLATES.

*A Town House in New York.*

THE title of McKim, Mead, and White stands for a fresh, scholarly, vigorous, type of classical architecture based on a study of Roman, Italian, and French work, but always stamped with modern character, and thereby possessing an interest which never attaches to mere transcripts of the past; and the remarkable feature of the firm's achievement is, that they have been almost uniformly successful in giving their own distinctive character alike to huge city buildings, collegiate buildings, and town houses. Among the last-named the house on Park Avenue, New York, which we now illustrate, is a fine example. The general proportions of the block are excellent, the voids and solids are well disposed, and the detail is extremely refined. The main rooms on the first floor are marked by a surface arcade, while on the second floor a most effective surround has been given to the windows. The cornice of the house is a most beautiful one, bold without being coarse; delicate, but with no suspicion of "finicleness." Altogether the design is a very fine one.

*Church of St. Martin-in-the-Fields.*

Gibbs built this church in 1721-26, and it is generally considered to be his finest work. The tower and steeple are effective from many points of view, but perhaps nowhere more so than, as seen on our plate, from the portico of the National Gallery. In the design of the steeple it will be noted that by means of a plain square stylobate the square belfry stage is raised well above the roof, being treated with a pilaster *motif*. Next is the octagonal clock stage, in which any horizontal tendency is counteracted by the curved pediments over the clocks, while huge vases are introduced at the corners to help the eye from stage to stage. Stilted on a base, the open octagonal stage rises very successfully, the entablature over the attached Corinthian columns being broken up in order to afford a minimum check to the eye, and thus increase the vertical feeling. Another selection of vases brings one to the concave-sided octangular base, with its curved capping, and in this is to be seen the last of the diverse ways in which Gibbs broke up his horizontal lines. The pyramidal terminal is pierced with circular holes and is heavily moulded.

*Orchestrelle Company's Factory.*

Without doubt, after the War there will be a great impetus in factory construction in this country, and in view of this we have thought it would be of real service to give a series of plates of modern examples, including American factories as well as factories in this country. This week we show the Orchestrelle Company's factory at Hayes, erected from designs by Mr. Walter Cave, F.R.I.B.A. The carcass is of red brickwork, the roofs are asphalted, the window openings are filled with metal frames, and the floors and supports generally are of reinforced concrete, carried out by Messrs. Stuart's Granolithic Co., under the direction of Mr. E. P. Wells, engineer.

*Farm Houses at Postbridge.*

These small farmhouses of one-storey have been designed to meet the requirements of two farmers of small holdings on the Duchy of Cornwall Estate on Dartmoor. The plan is in the form of an open quadrangle, and so arranged that three rooms are available in each house for letting purposes to holiday visitors. The materials are local granite for the walls, finished with rough-cast, and Delabole slating for the roofs. The work was carried out by Mr. John Halfyard, of Princetown, Devon. Messrs. Richardson and Gill, F.F.R.I.B.A., were the architects.





MODERN AMERICAN ARCHITECTURE (SERIES II.). XXV.—HOUSE ON PARK AVENUE, 68th STREET, NEW YORK.

McKIM, MEAD AND WHITE. ARCHITECTS.

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*Photo: A. B. Hamilton.*

MONUMENTAL ARCHITECTURE (SERIES II.). V.—ST. MARTIN'S CHURCH, TRAFALGAR SQUARE, LONDON.  
(From the Portico of the National Gallery).

JAMES GIBBS, ARCHITECT.

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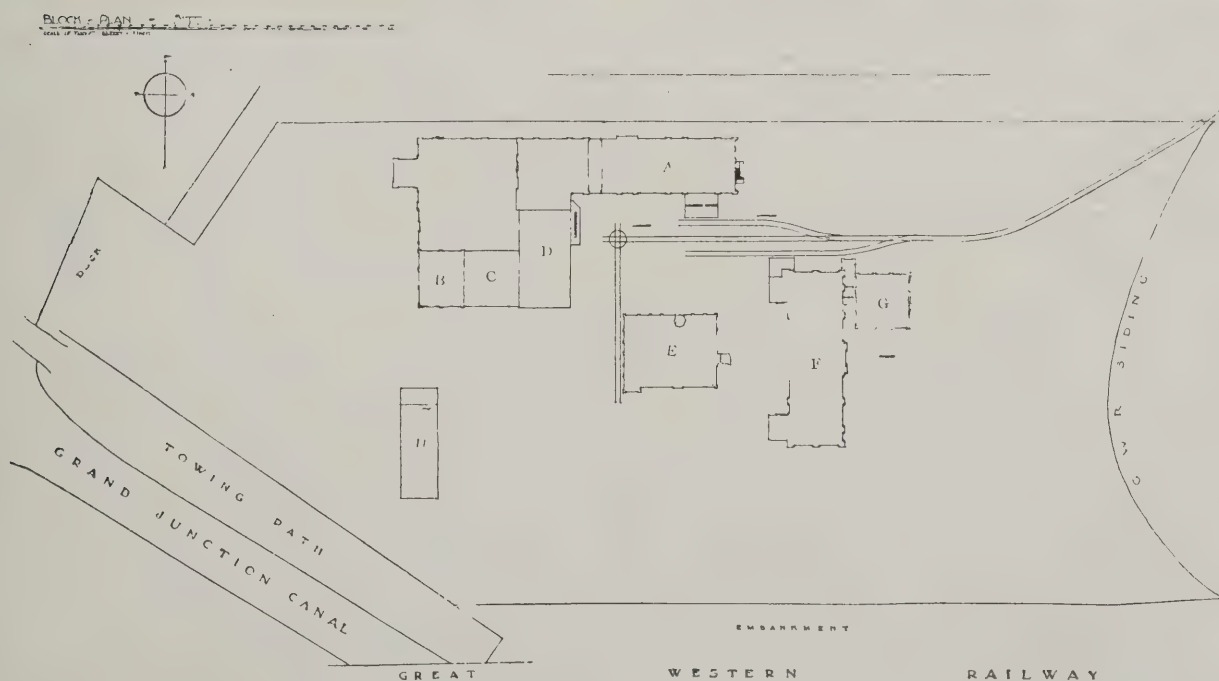


MODERN INDUSTRIAL BUILDINGS. I.—ORCHESTRELLÉ COMPANY'S FACTORY. HAYES, MIDDLESEX.

WALTER CAVE, F.R.I.B.A., ARCHITECT.

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A, Main Factory; B, Drying Room; C, Marking-Off Room; D, Machinery Room; E, Engine House; F, Music Roll Factory; G, Stencil House; H, Wood Shed.

MODERN INDUSTRIAL BUILDINGS. II.—ORCHESTRELLE COMPANY'S FACTORY. HAYES, MIDDLESEX.

WALTER CAVE, F.R.I.B.A., ARCHITECT.

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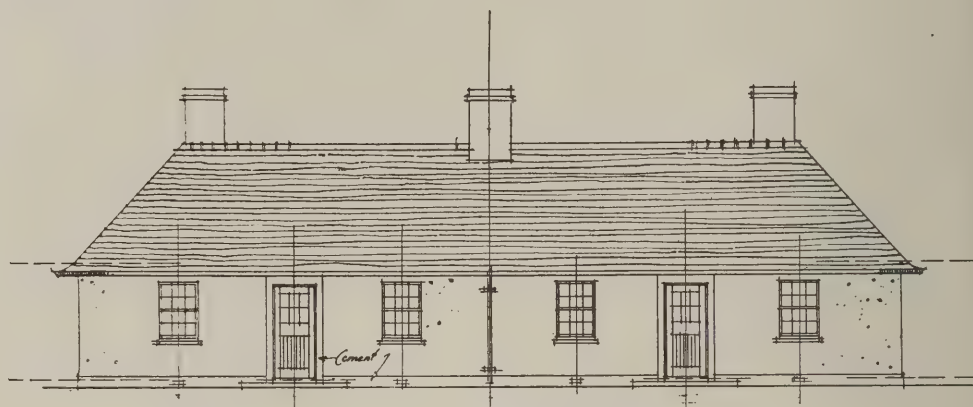


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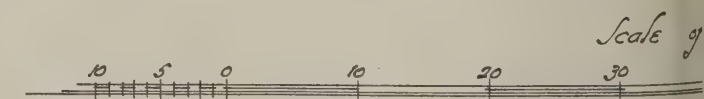
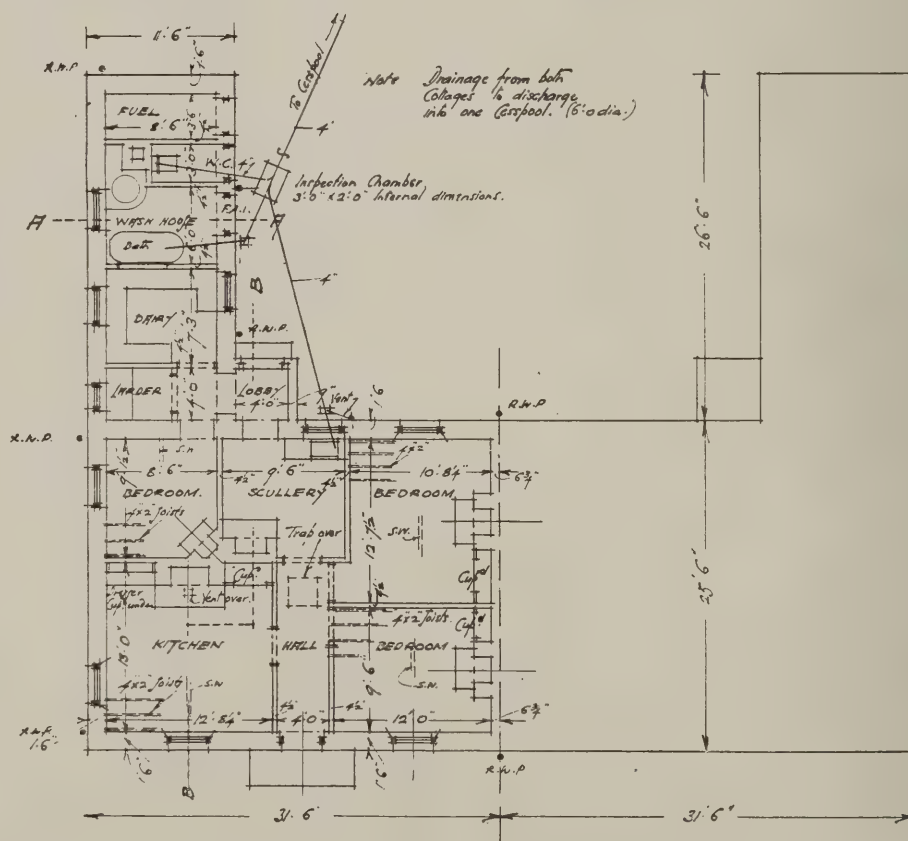
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# FARMHOUSES AT POSTBRIDGE DE FOR THE DUCHY OF CORNWALL



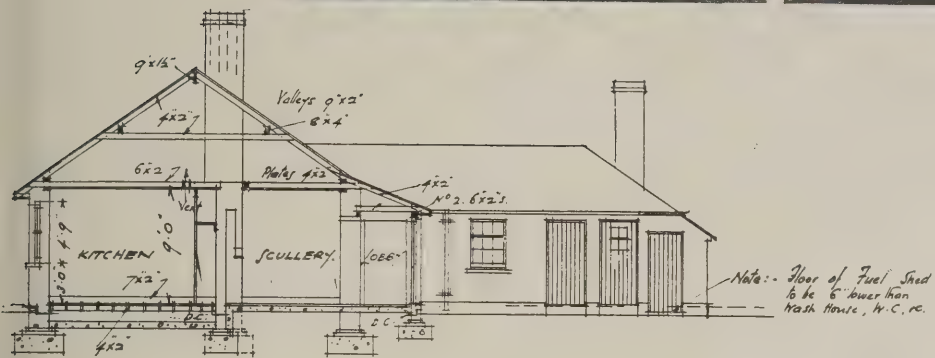
FRONT

Note: For height of windows see sections





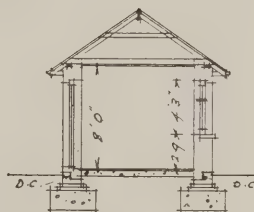
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SECTION B.B



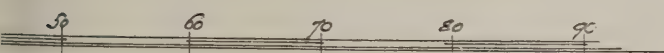
SIDE



A.A.



BACK ELEVATION



RICHARDSON & GILLYER, I.B.A.,  
ARCHITECTS,  
41, RUSSELL SQUARE W.C.

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## A SHORT HISTORY OF COADE STONE.

EARLY in the eighteenth century attempts were made in England to manufacture an artificial stone which could be used successfully for building purposes, and in 1730 Richard Holt published a short treatise on the subject, which he dedicated to the Earl of Burlington, dated "from the Artificial Stone Warehouse over against York Buildings, Stairs and near Cuper's Bridge, Lambeth, Surrey." How far this venture was successful cannot now be determined, but it is assumed that the works were carried on until somewhere about 1769, when Mrs. Coade either acquired them, or started on an adjoining site her more famous and lasting manufactory.

Although Mrs. Coade was fortunate or foreseeing enough to enlist the services of the best artists of her time in designing and directing her manufacture, it was with purely utilitarian ideas she started her work. She did not call it "Terra Cotta," though the most suitable Dorset clays were used in its composition, but advertised it as an "Artificial Stone," not cheaper than the real thing, but as a substitute which would withstand the effects of fire and frost; and she was lucky enough, early in her career, to produce irresistible evidence of the truth of her claim to the satisfaction of the many architects by whom she was eventually employed. Of these, perhaps, the most convincing is the work lining the Brentford Road at Sion Park, Isleworth, where the effects of a century and a half of weather on stone and two sorts of terra-cotta can still be seen. About 1775 Robert Adam erected what Gwilt terms "the disgraceful gateway at Sion," all the ornamental features of which are in terra-cotta, made by some imitator of Coade's artificial stone, which was badly fired and has twisted, and in many places, like the real stone in the ashlar of the walling, has almost perished. On the opposite side of the road stand some vases made by Mrs. Coade, and, save that one was damaged a few years ago by the fall of a tree, these are as sharp and perfect to-day as when they were first made.

Notwithstanding that much has been written, in a fragmentary way, about Coade's stone, the personality of its manufacturer has escaped identification. The name does not occur in the "Dictionary of National Biography," and we can only gather from

correspondence—as, for instance, the letters of Sir William Chambers—that she was known as "Mrs. Coade," although that, as a form of address at that period, may not necessarily have implied that she was married. Her ware was stamped with the name of Coade, and her accounts were made out in the name of E. Coade, which initial Wyatt Papworth considered stood for Elizabeth. As the manufacture went on for some fifty years after its first establishment, it is not unlikely that more than one generation of the family owned it; and the probabilities seem to be that it was started by Mrs. Coade, a native of Lyme Regis—Mr. Coade is quite mythical—and continued by a daughter, who was joined by a cousin named Sealy, by whom the business was carried on, until the latter's death in 1811, under the style of Coade and Sealy.

The site of the factory, which seems to have been started about 1769, was "near the King's Arms Stairs, Narrow Wall, Lambeth," to be found now a little south of the Charing Cross Railway Bridge, between Belvedere Road and the river. Here also were the only showrooms when the first catalogue of the ware was issued in 1784; but, finding the place too inaccessible for her patrons and for a proper exhibition of her work, Mrs. Coade opened a new building as a permanent gallery at the corner of the Westminster Bridge Road and Narrow Wall; and until recently the short row of houses stretching from there to York Road bore on them a terra-cotta tablet inscribed "Coade Row, 1797." The building of this gallery remained until a few years ago; and when it was pulled down to make room for the existing shops it retained in its mantelpieces and other decorative features traces of its original use. The entrance to the gallery from the street, constructed entirely in terra-cotta, was designed by John Bacon, R.A.; and an engraving of it, reproduced on the next page, forms the frontispiece of Vol. 41 of the "European Magazine."

From the catalogue of the contents of her gallery issued by Mrs. Coade in 1799 we are able to determine somewhat the extent of her patronage and the high appreciation her work had received throughout the world during the thirty years which had elapsed since she introduced it. A long list is given of places to which the ware had been sent, not only in the three



COADE FIGURES FORMERLY ON THE PELICAN ASSURANCE OFFICE, LOMBARD STREET, LONDON.



kingdoms, but on the Continent and in America; but, unfortunately, she generally omits the names of the architects and sculptors engaged, and but rarely particularises the buildings for which the work was prepared. It thus becomes difficult to trace a large proportion of her work; and as it is, when weathered by long exposure, not easy to distinguish from ordinary stone, it generally passes as such when nothing is known to the contrary.

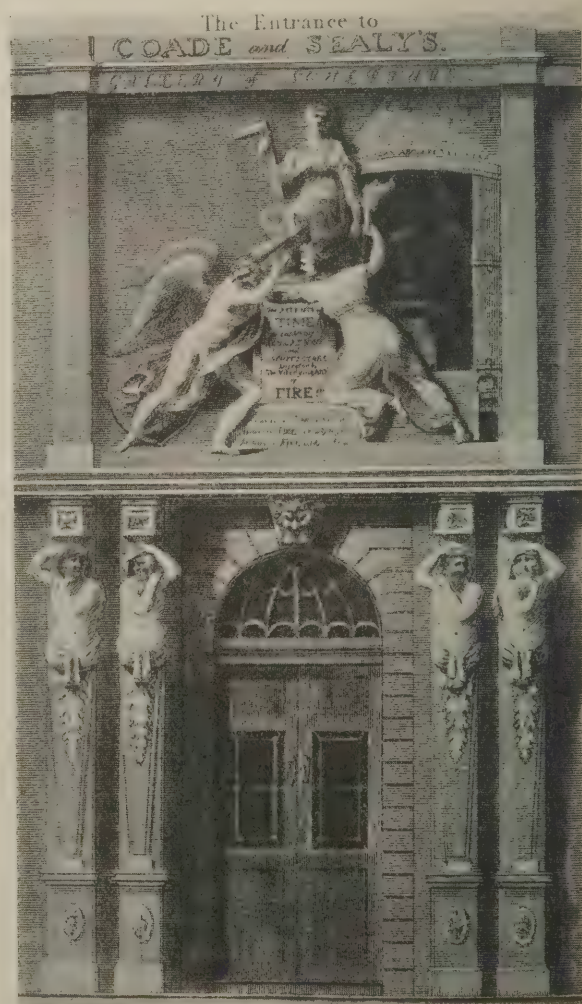
Mrs. Coade was fortunate in securing the patronage of Horace Walpole in the very year she commenced her manufacture, as it became the means of introducing her to James Essex and Sir William Chambers; and an account of the work she then executed is of particular interest, not only for this circumstance, but because it still remains at Strawberry Hill as an evidence of the durability of the material, although it was damaged by removal and rebuilding some years ago. The work consisted of two gate-piers about 2 ft. square and 12 ft. high, for which Walpole made rough sketches from portions of the tomb of Bishop William de Luda in Ely Cathedral, from which James Essex prepared the working drawings. The result, so far as the work was concerned, was satisfactory, for Walpole writes to Sir Horace Mann on June 8, 1771: "I have made a Gothic gateway to the garden, the piers of which are of artificial stone, and very respectable." The bill for the work, however, astonished him, and he referred it to Sir William Chambers to decide what amount ought to be paid. Chambers visited the factory at Lambeth accordingly in June, 1772, and went carefully through all the items of the account, which amounted to £175 12s. 10d., and examined the books, models, casts, and moulds, which last he pronounced to be "very formidable things," and finally certified that the out-of-pocket expenses of manufacture amounted to £151 14s. 10d. What Walpole eventually paid we do not know; but so desirous was Mrs. Coade of retaining his patronage that she told Chambers she would rather accept a hundred pounds for the work than incur his displeasure.

This introduction led to the employment by Chambers, in many of his works, of this artificial stone, as at Somerset House, where the twenty-nine vases which surmount the parapets, the designs for which are in the Soane Museum, were supplied by Mrs. Coade at a cost of six guineas each. She also made a number of beautiful vases, and other ornamental features, now in the grounds of Marino, near Dublin, the villa which Chambers erected for the Earl of Charlemont. James Wyatt also employed the material, and his introduction to it may be due to seeing the font (if he were not himself actually the designer of it) which he placed in Milton Abbey, Dorset, in 1791. This font, 4 ft. 10 in. high, is octagonal on plan, with eight figures set in niches around the pedestal, adapted from Sir Joshua Reynolds's window at Oxford. It, or a model of it, was sent to the Royal Academy for exhibition, but was rejected. But, the "European Magazine" of January, 1789, says "at the King's desire it was sent to Buckingham House, where it remained for some weeks for the inspection of the curious" with the result that a copy of it was made for and set up in St. George's Chapel, Windsor, another one in Debden Church, Essex, and a third in Milton Abbey, as already mentioned. Of these three Debden remains in use, Milton disappeared about the time Scott restored the Abbey, and that of Windsor was buried within the chapel when the new font by Pearson took its place.

The installation of this font at Windsor, which was probably due to the intervention of George III. himself, led to the introduction of the artificial stone to the notice of Henry Emlyn, who was then in charge of the works at St. George's Chapel. He there employed it for the three figures of the patron saints, which still

remain on the face of the west gable, and some armorial bearings on the cornice of the parapet, removed when it was rebuilt a few years ago, though they were then in a perfect condition; but the most important work of all was the great screen supporting the organ. This stretches across the west end of the choir in five bays of fan-tracery vaulting, the main shafts having cores of wrought iron 2 in. square inserted to take the weight of the organ; and were it not for the inscription "Coade, London, 1789," imprinted at each end of the screen, it might be, and, in fact, generally is, taken to be an exceptionally well-preserved piece of ancient stonework. There is also in the neighbourhood, in the church of Langley-Marish, across the Kederminster Chapel, another screen in Coade's stone vaulted in three bays, which may also be from a design by Emlyn.

During the time Mrs. Coade was executing these works for architects she was producing a large quantity of speculative work, examples of which were exhibited in her gallery, or preserved in a book of engraved designs mostly published before 1779. These designs include statues, vases, bas-reliefs, capitals, and various architectural ornaments, many of which were copied from the antique, such as the Townley marbles, or modelled for her by the leading sculptors of the day, among whom were Bacon, Banks, and Rossi; and though Flaxman is said to have been one of these, he may have done little more than make friendly suggestions and introduce some of those who had worked with him in Rome on Wedgwood's designs, chief of whom was de Vaere. Among the



ENTRANCE TO COADE AND SEALY'S GALLERY IN WESTMINSTER BRIDGE ROAD.

(Front's i.e. to the "European Magazine," 1802.)



works which were thus produced were the carytides, from Stuart's Athens, used by Sir John Soane at the Bank of England, the Farnese and Borghese vases, which stand on the garden terrace of Buckingham Palace, and a copy of the Fontana del Tritone, Rome.

John Bacon, R.A., who was apprenticed to Crispe, the manufacturer of Bow china, when he was out of his articles seems to have joined himself to Mrs. Coade's factory, and he continued to be associated with it, more or less, until his death, acting as a sort of art-superintendent to her works. In the introduction to her catalogue of 1799 she refers to this connection with some pride, thus: "With no disparagement of others, many acknowledgments are due to the genius and exertions of the late Mr. Bacon, in the early years of its establishment, whose models now form a considerable part of the collection." As the name of the maker and not of the sculptor appears on the ware, we are unable to identify much of Bacon's work, but we know that he modelled the figures of Faith, Hope, Charity and Meekness which stand in the vestibule of Greenwich Hospital Chapel; while the great group of figures supposed to represent the apotheosis of Nelson, which faces into the quadrangle of King William's building, for which Benjamin West supplied the sketch, was modelled by Bacon in conjunction with Panzetta. He also modelled a statue of Contemplation for Dr. Lettsom's house in Camberwell Grove, of which a replica occurs in the house at Bromley in which Dr. Philip Norman, was born. Two statues, probably by Bacon, were for many years lying about on some waste land near Mrs. Coade's gallery, but were rescued by the late Sir Henry Doulton, and are preserved at the Lambeth Potteries.

On Bacon's death, Jean de Vaere seems to have become the art manager of the works, and some of the most beautiful productions of the factory appear to have been modelled by him. De Vaere was born at Ghent in 1754, his mother being a descendant of the well-known Flemish painter Van Loo, and he was working in Rome until 1794. Here Flaxman met him and employed him on work for Wedgwood, for whom he modelled the Achilles and daughters of Lycomedes, and copied antiques, which possibly included the bas-reliefs on the sarcophagus containing the Barberini Vase, which Wedgwood reproduced some time after 1787. De Vaere probably worked for Mrs. Coade as long as her factory endured, for in 1810 he joined a lodge of Freemasons in London; and he died at Tronchinnet-les-Gand in 1830. It may be interesting to note in connection with this artist that his great-grandson, M. Gaston de Vaere, painted the wall decorations illustrating the Art of Music in the Donaldson Museum of the Royal College of Music, London, having completed them in 1895.

Among the works produced at the factory were a vast number of coats-of-arms and emblematic groups of figures, still to be found in London and the provinces, not only over shops and offices, but on public buildings, such as the Admiralty and Trinity House; and some of the most beautiful examples of terra-cotta are to be found among these groups. Two of them we are able to illustrate; one which stood until recently over the Union Assurance Office in Cornhill, and the other still standing over the Pelican Office (absorbed by the Phoenix Company) in Lombard Street. Of the former there is some little uncertainty as to the sculptor, the building to which it was attached having been twice pulled down, though it is generally attributed to Rossi; but of the second group we have the full history and a contemporary engraving published in the "European Magazine." The building of the Pelican Office was designed by Sir Robert Taylor for Sir Charles Askill, and when it was converted into offices in 1797 the present group of six figures (shown by the illustration on page 21) was erected. The first

sketch for the design is said to have been made by Lady Diana Beauclerk, who also worked for Wedgwood; but the whole was modelled by de Vaere, and forms, without exception, the most beautiful group of life-sized figures made by Mrs. Coade. There has been some slight departure from the original, or some subsequent alteration, as the early drawings show the hour-glass, to the right of the group, to be standing on a skull.

Another very beautiful example of the manufacture was the pair of vases, standing some five feet high, belonging to Sir Thomas Dyke Acland (one of them is illustrated on page 17 of this issue). They bear the imprint of Coade and Sealy, 1805, so that they belong to the period of de Vaere's rule; although they have been attributed to Thorwaldsen, the Bacchic scene depicted was very common on the bas-reliefs among which de Vaere had worked, and the pose and actions of the figures of this vase are identical with them. It may be mentioned that this example was originally bronzed and silvered, but nearly all traces of the metal have disappeared with the hundred years of exposure to the weather. Gilding was occasionally used by Wedgwood on his black basalts, and occurs on Dwight's Fulham Pottery busts; while Mrs. Coade's great statue of George III. at Weymouth was gilt all over.

Early in the last century, and within fifty years of its establishment perhaps through the extinction of the family, the business began to languish, and rivals sprang up in other parts of London. Rossi, who had been one of Mrs. Coade's staff, started for himself, and modelled the carytides and other decorations at St. Pancras Church for Inwood; and later still Bubb made the great frieze which until recently adorned the façade of the theatre in the Haymarket. Presently the same class of work began to be produced in Roman cement, which was much cheaper, though it depended on paint for its preservation, and the example set by Sir Robert Smirke in using it at the Oxford and Cambridge Club for the bas-reliefs over the first-floor windows, modelled by Nickoll, was extensively followed, to the ruin of the terra-cotta manufacturer.

From the lists published in 1799 we find that during the thirty years which had then elapsed the output of the factory had been enormous, and in the subsequent ten or fifteen years during which it endured the quantity may have been equalled; and there must therefore still be, after allowing for almost wanton destruction, throughout the country, a large number of Mrs. Coade's works, the origin and material of which are unsuspected and perhaps hidden under coats of paint. Prejudice against them has been often provoked through their descriptive mark "artificial stone," although they are of a terra-cotta which for excellence of manufacture and power to resist fire and frost can only be compared with the best work of this or any previous period.

It was Mrs. Coade's great merit that she had the good sense to employ artists of the highest class to make her designs; and it seems probable that she was more potent than a man could have been in persuading artists to overcome their natural prejudices against a medium that even now is not admitted to full and frank recognition as a vehicle for art. She was therefore a pioneer in the movement, which is now again gathering force, for securing a closer association between artistry and industrialism—for enlarging the artist's horizon and the scope of his activities. Where Bacon, Banks, West, and Flaxman led, the sculptors and designers of to-day need not hesitate or disdain to follow; nor will they; nor can it be supposed that the example of Sir William Chambers, and of contemporaries who were almost his compeers, has been lost on architects.





OPERATING THEATRE IN A TEMPORARY WAR HOSPITAL.

### A TEMPORARY OPERATING THEATRE.

One of the largest buildings taken over by the Government for the purpose of a War hospital is a certain lunatic asylum in the West of England. The building, which provides accommodation for nearly 1,600 patients, was found to be well suited to its new purpose, so far as wards and essential offices were concerned, but it was deficient in operating theatres. Accordingly, two temporary theatres were constructed—one at either end of the main hospital block—specially adapted to the manifold requirements of modern war surgery. They are both practically the same, differing only in one or two unimportant details. They are built of corrugated iron on timber framing, walls and partitions being lined with asbestos sheeting, distempred. Floors are covered with a patent fire-resisting composition.

The theatres are interesting examples of modern planning. Their pre-eminent virtue is that they are wholly self-contained, everything pertaining to a surgical operation being conveniently adjacent to the theatre itself and under one roof. From the accompanying sketch plan it will be seen that the X-ray, an indispensable accessory, is provided for in a separate compartment, the dark-room being on the opposite side of the corridor, and the dynamo-house outside.

The operating theatre itself, a room 20 ft. square, is equipped with every necessary convenience and device of the most modern type. It is lighted by three large windows in the end wall and by a top light running the whole length of the room. Electricity and gas are also provided. The theatre is heated by hot water radiators, the necessary apparatus being contained in a small compartment which forms an integral part of the theatre, though entered from the outside.

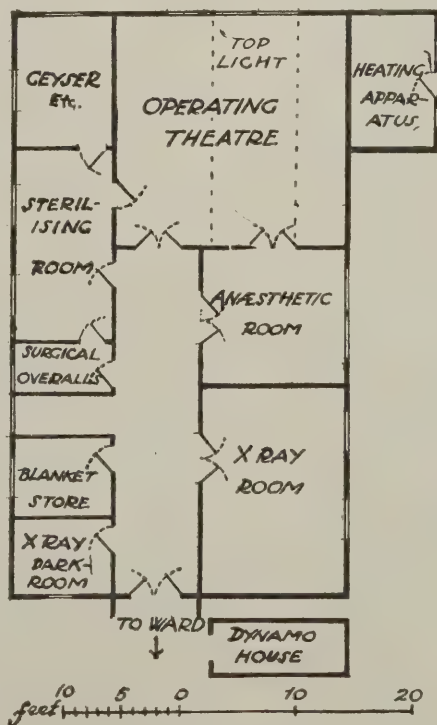
The remainder of the accommodation consists, as will be seen, of an anæsthetic room, a compartment containing a geyser (also one or two minor accessories, such as a gas ring for heating irons), a sterilising room, a small room for surgical overalls, and a blanket store. The small space between these two last is used as a store for brooms and other cleaning utensils.

The very great utility and convenience of the whole arrangement is obvious. Cases can be dealt with with the utmost

ease and rapidity. A patient to be operated on would first be wheeled into the anæsthetic room, where, of course, the anæsthetic is administered, and thence to the operating theatre, where surgeon, sisters, nurses, and orderlies are all ready waiting. His case dealt with, he is wheeled out through the other pair of swing doors back to his ward. Simultaneously the next case, who has just received the anæsthetic, is wheeled into the theatre. It should be noted that double swing doors are provided wherever it is necessary either to wheel a carriage or carry a stretcher.

G. J. HOWLING.

[Mr. Howling, we may add, is a member of our editorial staff who has been serving with the Forces since the beginning of the War. He has been successively at Malta, in Egypt, in Gallipoli, and in France, and is now a convalescent in a West Country hospital, after having been operated upon in the very theatre he here describes—this operation being the second he has undergone during the past year.—EDS. A. AND B. J.]



SKETCH PLAN.

### LEEDS HOUSING CONFERENCE.

At the second and concluding session of the Housing and Town-Planning Conference of representatives of local authorities in Yorkshire, Derbyshire, Nottinghamshire, and North Lincolnshire, held in the Civil Court of the Leeds Town Hall, Mr. Harold Shawcross (Rochdale) presiding, the following resolution was passed:—

"That this conference, recognising the need for having ready building and other schemes to afford employment at the end of the war, and also the great need for the further provision of houses for the working-classes, and recognising, further, the advantage of building such houses in connection with town-planning schemes, urges upon all local authorities throughout the country the importance of taking the necessary steps to promote and press forward town-planning schemes in their areas."

Professor S. D. Adshead (London) formally moved the resolution, remarking that if municipalities undertook housing schemes the planning would have to be on the lines of modern garden city development. We had come to the time when the long row of standard cottages in a standard street, if not dead, was defunct. There would still have to be some standard of cottage, but there must be no standard street. To illustrate the comparative simplicity of going on when once a start had been made, Professor Adshead said he had just finished a town-planning scheme for Finchley and had found that 90 per cent. of the preliminary spade work had been done away with because of the example set by Birmingham. On the point of necessity he cited Halifax, which, he said, possessed several streets 40 ft. wide and only 50 ft. long that could not go farther because of the peculiarity of the gradients. Under a town-planning scheme it might have been possible with much narrower roads to have developed the land more effectively. In conclusion, he urged that advantage should be taken of all the powers given by the Town-Planning Act.

#### Need of Arterial Roads.

Mr. W. T. Lancashire (Leeds City Engineer) moved the following resolution: "That this conference, recognising (a) the pressing need for improved arterial road construction in the great industrial areas represented at this conference; and (b) the great value of the town-planning provisions of the Housing and Town-Planning Act of 1909 in enabling arterial road schemes to be planned and carried into effect at a minimum of cost, appeals through the Local Government Board to His Majesty's Government for the establishment of a series of district conferences to be held under the auspices of the Local Government Board, or similar ones to those already formed for Greater London, in order that the needs of these various districts and the possibilities of combined action may be fully examined and made the subject of a special report to His Majesty's Government." Mr. Lancashire said that such large cities as Leeds, Sheffield, and Bradford had already learned their bitter lessons. They had spent millions in rectifying the shortcomings of the past, and were availing themselves of the powers given by the 1909 Town-Planning Act to plan out how the remainder of the areas shall be developed. Leeds had five schemes in hand with a total area of 4,688 acres, and there were a further 7,000 or 8,000 acres to be dealt with as soon as greater progress had been made with those in hand. It was remarkable how authorities found that they were not any



too early with the work even in the outer circles of the city. Personally, he would welcome compulsion in growing areas where the local authority did not move of its own accord. Within its own boundaries Leeds had several small communities where the old town streets had seemed wide enough for the needs of the districts, but gradually they had been built up to and surrounded by the expansion of the city, and the City Council had had to pull down all one side of such streets to widen a main line of communication at very heavy cost. Leeds and other cities had widened their main roads up to the city boundaries, but the smaller communities outside with a lesser outlook had permitted building up to the frontage lines of narrow streets, and later on, when these smaller places had been incorporated, the enlarged city had had to face a great expenditure which never should have been necessary if proper action had been taken. "An interesting case of want of forethought has occurred," he said, "in this city, where two important main roads have been spanned by railway bridges. The railway companies obtained powers to erect bridges many years ago of about 20 ft. span, though the roads are between 50 ft. and 60 ft. wide. No doubt the spans were sufficient for the needs of that particular date, but now the Corporation has had to face the expenditure of nearly £10,000 to secure the rebuilding to the full width of the streets, and more remains to follow." Mr. Lancashire also cited the differing tramway gauges of Leeds and Bradford as a mistake of former days.

The resolution was carried.

Discussion on a resolution urging an amendment of the Finance Act had been adjourned from the previous day because several delegates asked for detailed information with regard to the portion of the Act it was sought to alter.

Mr. Aldridge now explained that one of the definite objects of the Act was to make the unearned increment on land subject to special taxation, but to leave the profit of a builder in the same position as that of other manufacturers. The effect of what was known as the Lumsden judgment, however, had been to tax the profit of the builder specially. Mr. Lloyd George had definitely stated that he was anxious to remedy the grievance of the builders, and Mr. Montagu had undertaken to introduce the necessary legislation. It was the appeal for the complete fulfilment of the pledge that the delegates were asked to support.

The resolution was carried.

A considerable amount of discussion took place on a resolution which proposed to ask the National Housing and Town-Planning Council to consider and report to the local authorities and other associations represented at the conference "how the procedure for the acquisition of land for housing and town improvement purposes can be made less cumbrous, costly, and dilatory, and, especially where land is being withheld by landowners in order to secure unreasonable prices, provision be made for compulsory immediate purchase without lengthy and costly legal proceedings." Several delegates held that the acquisition of land was the main problem confronting housing reformers.

#### *The Clearance of Slums.*

Introducing a discussion on "The Suppression of Overcrowding and the Re-housing of the Poor," the Chairman said he believed that Mr. Long had some drastic scheme in hand. If that were so, it behoved local authorities and conferences like theirs to consider the ques-

tion very carefully indeed. It was a public health duty just as much as maternity centres and the inspection and feeding of schoolchildren. If we neglected it and allowed the people to live under present conditions no words would be too harsh to apply to us as a nation.

The Lord Mayor of Hull expressed the opinion that councils generally were too much dominated by property-owners.

## ENQUIRIES ANSWERED.

### *Damp Spots on a Wall.*

B. K. C. (Essex) writes: "Damp spots appear on the wall behind two pictures in a first-floor room of a country cottage built of lath and plaster. As the wall on which the mildew appears is a south-west one, it was believed that the damp could be attributed to the penetration of the rain caused by heavy winds, so the wall was weather-boarded over the plaster, which was retained for the sake of additional warmth and protection. However, the mildew still appears on the wall behind the pictures, and on the pictures themselves. What is the cause of this? Is it dry rot in the studs? And, if so, why should it appear only behind these pictures?"

—Mildew will often appear in such positions in moisture-laden atmospheres, not only in lath and plaster structures, but in weather-tight brick buildings. If the pictures are thrown forward ever so slightly from the wall surface, as may be done by fixing small blocks to the frames behind the lower corners so that air circulation will pass behind them, the conditions for the formation of mildew will be less favourable. Remove existing fungus by washing with dilute solution of corrosive sublimate (very dangerous).—G.

### *Parish Hall and Moving Pictures.*

X. T. (Lancs.) writes: "I am building a parish room in a rural district. The vicar intends to have moving pictures occasionally; will he require a licence? Who will be the authority requiring him to do so? Will that authority require me to provide doors opening outwards and to comply in other respects with the Cinema Act? I have provided a fire-proof operating room quite cut off from the audience, but I have not arranged the doorways to open outwards any more than I would for a church or a Sunday-school."

—In a rural district the authority administering the Cinema Act will probably be the County Council. Whether compulsory or not, it would be a wise precaution to make the exit doors open outwards.—G.

### *A Comparison Between English and Canadian Building Prices.*

X. writes: "A friend of mine who has taken out the quantities for a job in Canada, is desirous now of sending in his charges, but cannot obtain the amount of the contract, which has been let to an American firm. My friend's clients wish to pay him his charges based on English prices. This, of course, he objects to. I should be glad to know, therefore, what is the difference in percentage between English and Canadian prices for excavating, foundation concrete, brickwork, and steel-work."

—I believe that before the War the Canadian prices in the trades mentioned were about 40 per cent. higher than those ruling in England. But the rates in these trades have risen here within the past two

years by, approximately, that percentage. without, I understand, there having been a corresponding increase in those prevailing in Canada. A charge based upon current rates in England would therefore seem reasonable. C.

### *Provisional Sums.*

R. S. (London, S.E.) writes: "Some time ago I carried out some extensions to an hotel. A local builder was the contractor; the usual specification and plans were signed, also the R.I.B.A. contract was used. A provisional amount was specified for lead-glazing. I obtained a price for this work, as the contractor could not execute it. This price was not confirmed by him in writing, but he sent the necessary frames to be glazed. This amount has been charged up to me, as I ordered same. The builder refuses to pay this amount either to me or the firm who supplied the glazing."

—Querist acted most unwisely in himself ordering material, which should always be done by the contractor on the architect's instructions. The firm supplying the goods can only summons the person from whom they received their order, but if they are successful it may be possible for that party to recover in turn from the contractor. The case of Ramsden and Carr v. Chessum, decided by the House of Lords on November 10, 1913, has some bearing. Clause 28 of the R.I.B.A. form of contract is explicit as to when sums in respect of provisional amounts should be paid.—G.

### *External Plastering Becoming Detached.*

"ENQUIRER" (Cornwall) writes: "I am having trouble with a brick residence which has been rough-casted externally in cement, the whole of the external plastering (not only the rough-cast finish) being almost detached from the wall, so that it almost forms a detached skin sounding hollow everywhere. Would the following data entirely account for this: Face of bricks very smooth, almost equal to a facing brick. Joints not sufficiently raked out, plastering done in hot weather. Also, would the use of beach sand both for wall mortar and for plastering have any ill effect, not in regard to dampness, but in regard to defects mentioned? This is universally used in the locality. If the walls were built in Aberthaw lime, would this effect the key of grip in any way?"

—The smooth-faced bricks and hot weather work would probably be contributory causes, but it may be surmised that the use of insufficiently cooled cement, which has expanded in setting, is the prime cause. The other factors are unlikely to have any great effect.—G.

### *Iron Stains on Plate Glass.*

Q. B. S. (Westminster) writes: "Can you tell me the best way to clean iron stains off a skylight composed of rather rough plate-glass?"

—Try washing the surface of the glass with dilute sulphuric or muriatic acid, which will remove the crust. Scour with a stiff brush and rinse with further solution and clear water.—G.

### *Curing a Damp Wall.*

P. and B. (Lancs) write: "During the wet weather of the last two winters, the rain appears to have driven right through the walls and plaster of a house in an exposed position. Can you recommend anything with which we could paint the walls



so as not to alter the appearance of the house and yet prevent the damp striking through?"

—How to protect external porous brick-work from wind-driven rains without altering to some extent the appearance of the surface is, we fear, an insoluble problem. There are, however, several preparations that effect the chief object in view without disfiguring the surface. Querists should state the case to such firms as the Glidden Varnish Co., 86, Clerkenwell Road, E.C., and the Indestructible Paint Co., Ltd., King's House, King Street, London, E.C., and try samples on a small scale. Internal treatment with waterproofed cement would effect a cure without interfering with the external surface; or if the rain comes through the joints only these should be re-pointed with waterproofed cement.

## NEWS ITEMS.

### *New Fellows of the Institute.*

Mr. C. S. Errington, of Newcastle; Mr. Frank Swash, of Newport, Mon.; and Mr. Wilfrid I. Travers, of London, have been elected Fellows of the Royal Institute of British Architects.

### *"Decolite" Fire-Resisting Floors.*

"Decolite" fire-resisting floors have recently been laid by Messrs. Bell's United Asbestos Co., Ltd., at the Palladium Theatre, Oxford Circus (Mr. Bertie Crewe, architect).

### *Maison Lyons, Oxford Street, London.*

We regret that in the description of this new building given in our issue for December 27, we omitted to state that Messrs. Stuart's Granolithic Co., Ltd., of 45, Bedford Row, W.C., executed pavings and staircases.

### *Institution of Municipal Engineers.*

Mr. Edward Whitwell, president-elect of the Institution of Municipal Engineers, is a vice-president of the South Wales Garden Cities and Town Planning Association, a Fellow of the Institution of Sanitary Engineers, a member of the Society of Engineers, a member of the Society of Mechanical Engineers (late Civil and Mechanical Engineers' Society), a member of the Society of Architects, a member of the Institution of Municipal and County Engineers, and in 1912 was elected a member of the National Housing and Town Planning Council and of the South Wales Institute of Engineers. He has been a member of the Institution of Municipal Engineers since its inception, and during the last four years has been a vice-president.

### *Cathedral Memorial to Nurse Cavell.*

A memorial, with medallion portrait of Nurse Cavell, designed by Mr. Temple Moore, has been unveiled in the nave of Peterborough Cathedral by the Dean. The medallion shows Nurse Cavell in profile, and the inscription, cut in letters copied from a beautiful seventeenth century monument, reads as follows: "In thankful remembrance of the Christian example of Edith Louisa Cavell, who devoted her life to nursing the sick, and for helping Belgian, French, and British soldiers to escape, was on October 12, 1915, put to death by the Germans at Brussels, where she had nursed their wounded. This tablet was placed here by the teachers, pupils, and friends of her old school." It is erected on one of the great Norman pillars of the nave, a place specially

chosen by Mr. Temple Moore. In this many foreign precedents are followed, but objections have been raised to this custom.

### *R.I.B.A. Problems in Design.*

The following subjects have been set: XXXI. (a) A chapel, without aisles, opening out of the south side of a modern cathedral; (b) two-storey building, consisting of shops on lower floor and concert hall above, on an island site in a county town. XXXII. (a) A shipping company's offices on an island site on a quay at a big port; (b) a covered market at a sea-side town. XXXIII. (a) A college quadrangle, 100 ft. square, with a cloister, library, and students' rooms. Designs by students in the United Kingdom have to be sent in respectively by February 27, April 30, and June 30.

### *Minor Matters of Town Planning.*

Mr. Joseph Thorpe, addressing the London Society, advocated more attention being paid to the smaller matters in the modern city so as to secure greater order. At present the rulers were more occupied with great problems, but there were smaller ones, such as the orderly naming of streets and the numbering of houses, on which he would like the Society to concentrate its earnest attention. The question of fog was now present to their minds. It could be got rid of if they stopped black smoke coming from buildings. One firm which had been induced to put improved combustion furnaces in their works saved £3,500 a year in fuel.

### *Corporation Contracts and Increased Labour Cost.*

A firm of builders have written to the Brighton Works Committee stating that, on application from the men's union, the Master Builders' Association have agreed to raise the wages of all trades  $\frac{1}{2}$ d. per hour commencing from December 2 last, and requesting the Corporation to meet them in the matter of the men engaged on Corporation contracts. The Committee resolved: "That Messrs. — be informed that, provided they pay to the workmen engaged under the Council contracts the increased scale of wages agreed to by the Master Builders' Association, the Council will agree to the same being charged to the Corporation under the contract."

### *The War and the Building Trade of Leeds.*

Interesting comparisons between the state of the building trade in Leeds in 1915 and 1916 are provided in a return issued by the Building Surveyor for the year ending November 30. The number of villas built was fifteen, as against fourteen in the previous year; semi-detached villas fifty-five, against sixty-five; "through" houses twenty-three, against eighty; and "back-to-back" houses none, against seventeen—the totals being seventy-three, against 176. The number of miscellaneous buildings erected was 368, as compared with 377. The estimated value of buildings shown on approved plans (exclusive of site value) was £289,286, as against £415,844. The large buildings completed during the year include three picture theatres, additions to workhouses, and an addition to the General Infirmary, six factories and works, while the buildings in course of erection comprise the addition of a new ward pavilion and two extensions to the infirmary, extensions to the electric power works, eight factories and works, fourteen additions to engineering works and four to factories, a picture theatre, a Sunday school, and an addition to public baths.

## THE SOCIETY OF ARCHITECTS AND THE R.I.B.A.

In their annual report for the past year, to be presented at the annual general meeting to be held to-morrow, Thursday, January 11, the Council of the Society of Architects say that they have long felt that, if possible, opportunity ought to be made during the War for a conference with the R.I.B.A. on some points at issue hitherto between the parties, so that the friendly relations existing at present between them might become permanent and the need for raising similar contentious questions after the War become non-existent. After due deliberation, and taking fully into account the delicacy of the task, the Council felt justified in taking the initiative towards further co-operation. A letter was therefore addressed to the Council of the R.I.B.A. suggesting a conference of representatives on registration and other matters. In doing so the Society pointed out that both bodies were to a large extent agreed upon the principle of registration, but divided upon the method of carrying it into effect, the result being that when either party made a move a deadlock ensued. The Society also suggested that even on less contentious matters there was unnecessary overlapping and duplication of effort, and that there was room for co-operative action on economic lines in the direction of the standardisation of forms of contract and other professional documents and in other ways. The reply of the Council of the R.I.B.A. was to the effect that as the subjects suggested for consideration at the proposed conference were of a controversial character, the Council were precluded from discussing them during the War by pledges given to their members. The Council of the Society received this information with regret. They will now have to consider whether in these circumstances the Society shall proceed independently in formulating its registration programme, issuing its form of contract, and developing its other reform proposals in readiness for propaganda work after the War.

## TOWN PLANNING SCHEME FOR SOUTH SHIELDS

The application of the South Shields Town Council and the Rural District Council, made under agreement with the two bodies, for authority to prepare a town planning scheme for the areas under their control, respecting which an inquiry was some time ago held, has been favourably entertained by the Local Government Board, who have communicated their decision to both authorities. The Board state that they have decided to comply with the application, subject to the exclusion of the following from the area:—(1) The South Shields Union Workhouse and adjoining Poor Law buildings, and (2) the small portion of a building adjoining an enclosure at Low Simonside, which is intersected by the Jarrow municipal borough boundary. The application of the South Shields Town Council was for a scheme covering areas partly within the county borough and partly within the rural district, and in a letter to the Town Clerk the Assistant Secretary to the Local Government Board has written: "I am able to state that the (Local Government) Board have decided to authorise the Town Council to prepare a town planning scheme for so much of the area as is within the county borough."



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# THE ARCHITECTS' & BUILDERS JOURNAL.

Wednesday, January 17, 1917.

Volume XLV. No. 1150.



THE ADMIRALTY, PETROGRAD: GRAND STAIRCASE.

ZAKHAROFF, ARCHITECT.

*(See article on page 32.)*

# THE ARCHITECTS' & BUILDERS' JOURNAL.

JANUARY 17, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1150.

## EDITORIAL.

IN delivering, at the St. Bride Foundation Institute, last week, a paper on "The Design and Construction of Industrial Premises," Mr. A. Alban H. Scott was no less opportune than authoritative. His experience in this class of construction is probably unexcelled, and the need for such information as he can impart is certainly urgent, seeing that the resumption of building activity will be marked by a probably unprecedented demand for factories. Factory construction is so essentially a modern innovation that it would be absurd to imagine that it has as yet reached its final stage of perfection, even in the case of old-established industries. What is known as "the factory system" had hardly begun until hand labour was superseded by machinery. It was, of course, the introduction of steam power that abolished cottage labour and caused the collection of cottagers into large buildings. Then began a sad deterioration of the health of working communities, which, previously scattered in separate houses over healthy agricultural districts, were now herded together by scores and hundreds in large factories, around which speedily grew unhealthy townships.

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The earliest mills seem to have been erected in entire ignorance of hygienic principles. Often built on morasses, and with low and stuffy rooms very inefficiently lighted, and with every principle of sanitation ignored or defied, the earliest mills were, as Mr. B. H. Thwaite has said, in a pioneer book on the subject (for it was published in 1882), veritable dens of death. Legislation had to intervene, and Sir Robert Peel, himself one of the first owners of factories, passed in 1802 the first Act for the amelioration of factory life. This first of the Factory Acts was naturally inadequate. In 1815 Peel promoted a commission of inquiry into the working of factories, with the result that in 1819 a further Act was passed. Afterwards came the Factory Act of 1856, the Factory Acts Extension Acts of 1864 and 1867, the Sanitary Act of 1866, the Workshops Regulation Act of 1867, the Factory and Workshops Acts of 1870, 1871, and 1872, the Factory Act of 1874, and the Public Health Act of 1875. In the Act of 1878 it was provided that a factory and a workshop must be kept in a cleanly state and free from any effluvia arising from any drain, privy, or other nuisance; that it must not be so overcrowded as to be injurious to the workpeople and must be ventilated in such a manner as to render harmless as far as practicable all the gases, vapours, dust, or other impurities generated in the course of the manufacturing process or handicraft carried on therein that might be injurious to health.

To secure the observance of the requirements of this Act as to cleanliness, it was ordered that all the inside walls of the rooms, and all the ceilings, and the tops of such rooms (whether such walls, ceilings, and tops be plastered or not), and all the passages and staircases, if they had not been painted with oil and varnished once at least within seven years, must be limewashed once at least within every fourteen months, to date from the period when last limewashed; and if they had been so painted and varnished, they must be washed with hot water and soap once at least within every fourteen months. It was further provided that every hoist or teagle near to which any person was liable to pass or to be employed, and every wheel, strap, or band directly connected with the steam or water or other mechanical power, whether in the engine-house or not, and every part of a steam-engine and water-wheel, must be securely fenced close to the edge of the wheel-race; and every part of the mill-gearing must either be securely fenced or be in such a position or of such construction as to be equally safe to every person employed in the factory as it would be if it were securely fenced; and all fencing must be constantly maintained in an efficient state while the parts required to be fenced are in motion or used for the purpose of any manufacturing process.

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This Act effected a vast improvement in the health of operatives, but in the three or four years between its passing and the publication of Mr. Thwaite's book its effects were hardly observable, for the author notes that although at that date great sanitary projects had been carried out under the provisions of the Sanitary Acts, yet the death-rate in our manufacturing towns had shown very little decrease. He adds that the principal cause of this mortality was undoubtedly the then prevalent insanitary arrangements of factories and workshops. He saw, and said—what was less clearly recognised then than it is now—that "if we are to compete successfully against the Americans and the Continentals for foreign markets, we must carefully preserve the vigour of our workpeople." Although it could hardly be said to-day, as Mr. Thwaite could then say without fear of contradiction—because the evidence that had been tendered to a Parliamentary Commission of Inquiry warranted only too fully the condemnation—that "the sanitary arrangements of the majority of our factories and workshops are disgracefully defective," yet there are, even in the present day, too many factories of which it could only be too truly predicated. Writing when the "eight-hours movement" was regarded as a wild Utopian dream, and when the normal working day for operatives was ten hours, he nevertheless s



reason to anticipate an extension of them, and he therefore threw out this caution: "The labour of most of our various branches of manufacture, if relieved from the insanitary accompaniments"—an expression that was no doubt intended to be interpreted in its broadest sense, and not merely as a simple matter of plumbing—"would not be nearly so exhaustive—a fact of importance if foreign competition becomes more pressing, and longer hours of labour become an unfortunate necessity."

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Commercial prosperity often implies that a factory must be continuously occupied, all through the night as well as all day. Not that the workers are the same all the time—that is manifestly impossible; the point is, that a building occupied almost without intermission must become saturated with foulness unless it be constructed and tended with a view to combating this contingency.

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In this respect the designer of factories may get many hints from hospital construction—and here it is surely not out of place to acknowledge the debt of architects to the medical profession—not only to those eminent sanitarians, of whom Dr. Benjamin Ward Richardson stood for the type, who established the first principles of public health, and forced a more or less unwilling community to adopt them, but more especially, or at all events more immediately, to those medical officers of health who quietly and persistently push reforms that, without the knowledge and authority they bring to bear on the subject, would be impossible of accomplishment; and these gentlemen are ever ready to co-operate with the architect in every endeavour to overcome the ignorance, apathy, and prejudice, against which the architect must often struggle unsuccessfully unless he has medical opinion to support his representations or demands. With respect to sanitation, it may be said with much confidence that there is but little room for improvement, provided that factory owners avail themselves of the abundance of resource which the devisers and makers of sanitary wares hold at their disposal. That the appliances which ensure absolute cleanliness are not universally adopted is quite certain. In too many factories there is foul woodwork where there should be clean impervious surfaces, of which there is a wide choice, and in every detail of construction there are specialities to which greater attention should be given—by architects as well as by building owners—and no doubt would be given, if manufacturers were more careful to keep them constantly under notice by a freer use of the best means of publicity.

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With respect to the grant of £2,000 a year for the establishment of a Chair of Architecture in Sydney University, upon which we commented briefly last week, want of space prevented our adding that there is much to be said on both sides of the question whether or not the incumbent of such a Chair should be required to give up his whole time to the work. On the one hand, it is argued that a leading architect in lucrative practice would naturally be reluctant to abandon it for such fame and fortune as a university chair could offer, that therefore the best men would not be available, and that the professor would, as such, lose some of his efficiency by gradually, but certainly, falling behind the march. On the other hand it is held that either function demands a man's undivided attention, that the best architects are not necessarily the best professors, and that to keep abreast of the movement it is not at all necessary to keep in close touch with actual work; the essential qualification

being that, unlike a purely scholastic professor, the professor of architecture shall have been a toiler and moiler, in which case his cunning can never wholly desert him. On the whole, we are disposed to agree with those who claim that the professor should be free to practise; and that, we believe, is a condition prevailing in nearly, if not quite, all appointments of the kind that have been made hitherto—at all events within recent years. It is unnecessary to cite instances, which are numerous and conspicuous in all the professions. A professor of theology who ceased preaching, a law lecturer who did not plead, or a lecturer on surgery who did not operate, might be found here and there, but would be exceptional, and the precedent holds good for the architect, who, if his practice happen to be large, can easily overcome the difficulty by arranging a partnership—which, indeed, in the case of a man prominent enough to be selected for a Chair, is likely to be already in existence.

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From the valuable and interesting "Annual Wood Report" which has just been issued by Messrs. Foy, Morgan and Co., we gather that "the result of the past year's trading has proved to be highly successful"—presumably to merchants and shippers. Timber-users would probably tell another tale. There has been, it appears, a shortage in supplies amounting to nearly 630,000 standards, representing a loss of nearly one-third of the normal supply. But while the volume of supplies has shrunk enormously, being the smallest on record, "the cost has exceeded by several millions even that of the bumper year 1913." According to the Board of Trade returns, the value of the imports in the "bumper year" was £33,789,356, for 11,589,811 loads, while for 1916 the figures were £40,199,469 for 6,318,872 loads—say six millions and a half more money for five millions and a quarter less in loads. Government importations, which are believed to have been very extensive, are not included in the 1916 returns; and if, after the manner of Governments, our rulers have purchased lavishly in excess of requirements, there is a good time coming for purchasers, and a bad time for merchants when and if the Government sees fit to release its surplus stocks.

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Cynics have already said that the only reason why so many timber structures are being run up in the parks and elsewhere is because the Departments have more timber on hand than they knew what to do with; otherwise the comparative neglect of "the newer methods of construction," of which even the Education Department had become aware (for the phrase is their invention) is unaccountable, unless these sheds are intended to convey symbolically an encouraging official assurance that a state of war is not expected to be permanent. This impression of temporariness is certainly comforting in more ways than one. If the public got an idea that these encroachments on amenity were intended to outlast the duration of the war, the chorus of protest, following immediately on the declaration of peace, might possibly be accompanied with a hatchet obligato. Seriously, it is a disadvantage to ultimate economy that when the time comes for dismantling these timber structures the materials will go very cheap, and will be no great bargain at that. The staffs of learned clerks that occupy them will not "fold their tents like the Arabs, and as silently steal away." They will make their exit amidst a tremendous din of Thor's hammers, with splintered battens and rusty nails raining about their ears; whereas the adoption of some standardised system of construction would have insured noiseless and rapid erection and demolition, and at the end the portable materials would have been almost as valuable as they



were at the beginning, and would come in very opportunely for the construction of temporary dwellings in the devastated areas of France and Belgium.

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Undoubtedly the war, which has done so much to retard housing, has supplied the most powerful incentive to more vigorous tackling of the problem. At Batley a town councillor went to the root of the matter by pointing to the terrible ravages of the war, and thence inferring the preciousness of child-life and the necessity for rearing it in health and strength. If more attention had been given to housing, very many more fit men would have been available for the war; and the doctors who, in examining so many millions of recruits, have had an unprecedented opportunity of assessing the physical condition of the nation, will hereafter be in a position to throw increased weight and authority into the hygienic case for housing. Upon the housing of the poor depends our ability to hold our own in the world's markets, as well as in its battles; and this argument, cheap and commonplace though it is, assumes dynamic force now that its truth can be proved to demonstration by reference to concrete facts and figures.

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Sweet are the uses of adversity. The lawn in front of Gwydyr House, Whitehall, being required for a "departmental annexe"—a fine phrase which we willingly substitute for the blunt one that naturally leaps to the lips—the statue of Clive that stood there without much justification has been moved to King Charles Street, and now stands beside the India Office—a wholly appropriate position: for did not Clive "create the Indian Empire before he was forty years old"? At the next removal (for statues have a restlessly peripatetic habit) he should be taken inside, where he would be more inspiring and less subject to climatic vagaries, and where, symbolically of his desperate career, he could stand with his back to the wall. It is one of the chief disadvantages of the placing of outdoor statues that a back view of them is provocative of resentment and derision; as when some eighteenth-century lampoonist wrote of Bird's Queen Anne at St. Paul's that Her Majesty stood "with her face to the inn and her back to the church." If we must have statues, they should stand in niches.

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A widely circulated paragraph summarising a discussion by Richmond Town Council of Mr. G. Gilbert Scott's designs for the Star and Garter Home for Soldiers on Richmond Hill strikes one as being grossly unfair to the architect. If it had merely recorded that the designs were referred back to the Highways Committee, who were to meet Mr. Scott in conference, there could be no objection to the statement—such conferences are common, and almost essential; but unfortunately the paragraph reproduces some vaguely disparaging sentences uttered by two or three aldermen, one of whom is reported as saying that "they wanted a structure that would be in keeping with the beauty of the surroundings, and not a great barrack-looking place," while another suggested the addition of a clock-tower. Now, we have not seen these designs, but we know Mr. Scott's work so well as to be very confident that the architect of Liverpool Cathedral can have produced nothing that would deserve to be called "a great barrack-looking place," and experience has shown us the value (or contrariwise) of aldermanic opinion on architecture. There is no more reason for supposing that in this instance the architect has fallen below his high standard than for imagining that his critics have soared above aldermanic ideals; but the general public may not reason thus. Hence our protest against the circulation of the paragraph.

## HERE AND THERE.

I TAKE up the cue from Professor Lethaby, who has always something to say, and can say it, as contrasted with those who have nothing to say, and can't say it. He is writing about "The Spirit of Rome and Our Modern Problem in Architecture," in the "Architectural Review" for February—some magnificent etchings by Mr. Walcot illustrating his theme—and he makes this point, among others: that architecture for us should be essentially a practical art developing structural art—"Archistructure." He urges that "architecture," instead of being a bogey, mystery, "which adepts write about as experts in table-turning might on their art," shall be translated into "just modern building—frank, sound, and joyous." And then he gives us a little autobiography saying: "I mean this in the most practical way, and remembering my own training, such as it was. Architecture I used to think was an individual thing, or, at most, it was something which concerned only a particular client and a particular architect. It required genius; we thought much of genius—too much—and of common sense too little. The idea of public spirit, of city unity, of reasonable service in the cause of civilisation, never entered my head. In some such idea, however, might be found, I think, a steady force which would correct the architectural anarchy of our streets, and it should form a basis for an understandable theory of criticism. . . . Architecture is really not abstract lines and curves and surfaces: it is the builded evidence of spirit and life and pride. . . . It appears to me that we have to aim at better production everywhere. For centuries our education has been directed to cultivate appreciation of literature and art, and music, rather than to production, and this is one of the many reasons why we are always looking backward, and the stream of living art is failing us. We must aim at doing great new things rather than at knowing words about ancient things. Our criticism so far as there is any, is directed to the same end of enjoyment, not to growth. Under this tradition, for instance, Music has come to be a matter of special performances before knowing ones, not a great and necessary inspiration for a whole people. Similarly, Art, under the influence of the critics of the daily Press and the dealers, has been narrowed to mean little more than exhibitions of oil-paintings, which we pay a shilling to see, as if it were a five-legged cat. Properly speaking, Art is at least the half of civilisation, and without it life must dry up. . . . I mean that architecture is essentially a public art, which represents the public spirit of its time, and that we need it."

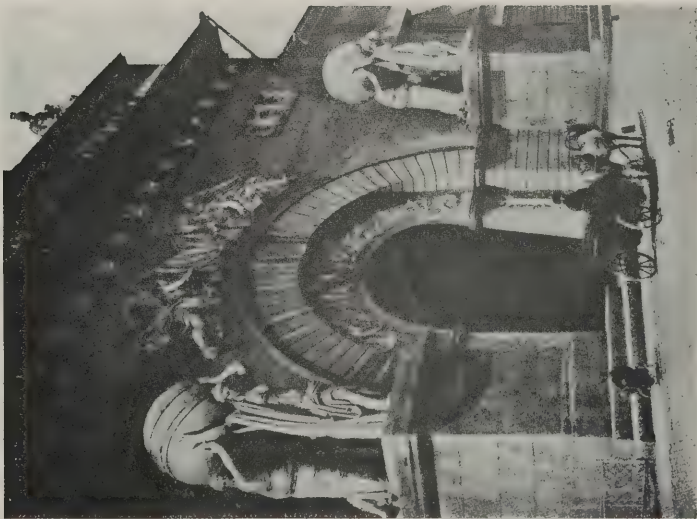
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"We must aim at doing great new things rather than at knowing words about ancient things." We must indeed. There has been too much quibbling over trifles of the past—as to whether the Ionic Order really was used here before it was used there; as to whether this scrap of carving belonged to one particular temple and that scrap belonged to another; as to whether the celebrated architect went for his foreign trip on July 1 or July 23, and that other celebrated architect laid the first brick at the beginning of the year or at the end of it; and so on. The records of the Institute are full of this sort of futile stuff, and while architects have been bothering themselves about it, engineers have been applying themselves to the problems of to-day, and quietly getting the work which architects ought to have secured. The point is similar to that which concerns what is called a Modern or a Classical education, the whole issue of which depends upon whether or not a man has to earn his living, for if he has, and he is spending precious time on Old French when he should be studying mathematics (assuming in this case

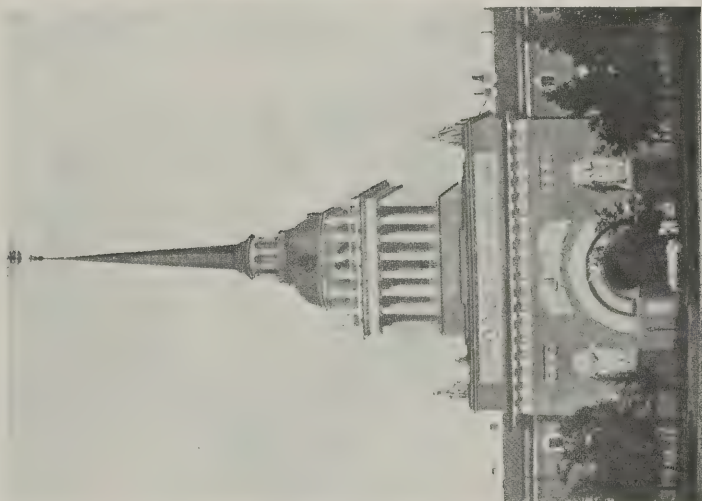




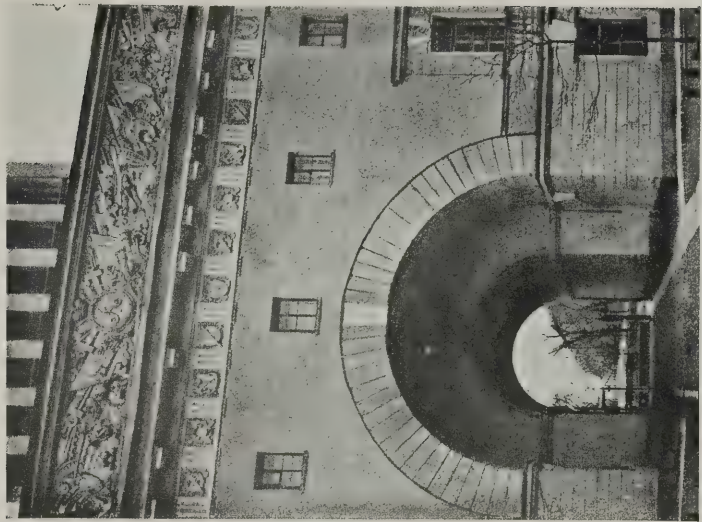
Main Façade.



Main Entrance (Outer Face).



Central Tower.

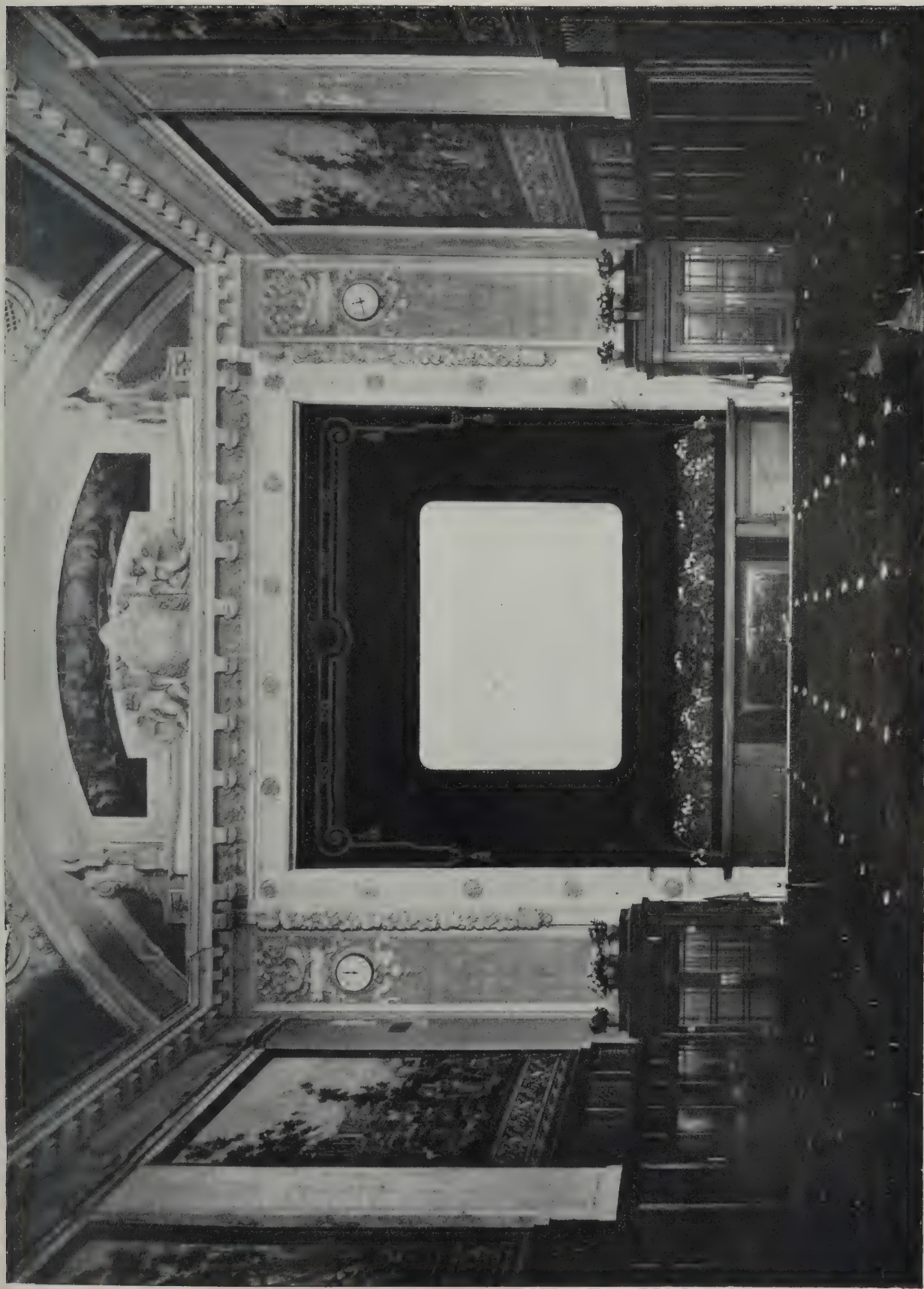


Main Entrance (Inner Face).

MONUMENTAL ARCHITECTURE (SERIES II.). VI.—THE ADMIRALTY, PETROGRAD,  
ZAKHAROFF, ARCHITECT.







CURRENT ARCHITECTURE (SERIES IV.) XII.—PRINCE OF WALES PICTURE HOUSE, CLAYTON SQUARE, LIVERPOOL.

GEORGE L. ALEXANDER, A.R.I.B.A., AND MATTHEW WATSON, LANDLESS & PEARSE, ASSOCIATED ARCHITECTS.





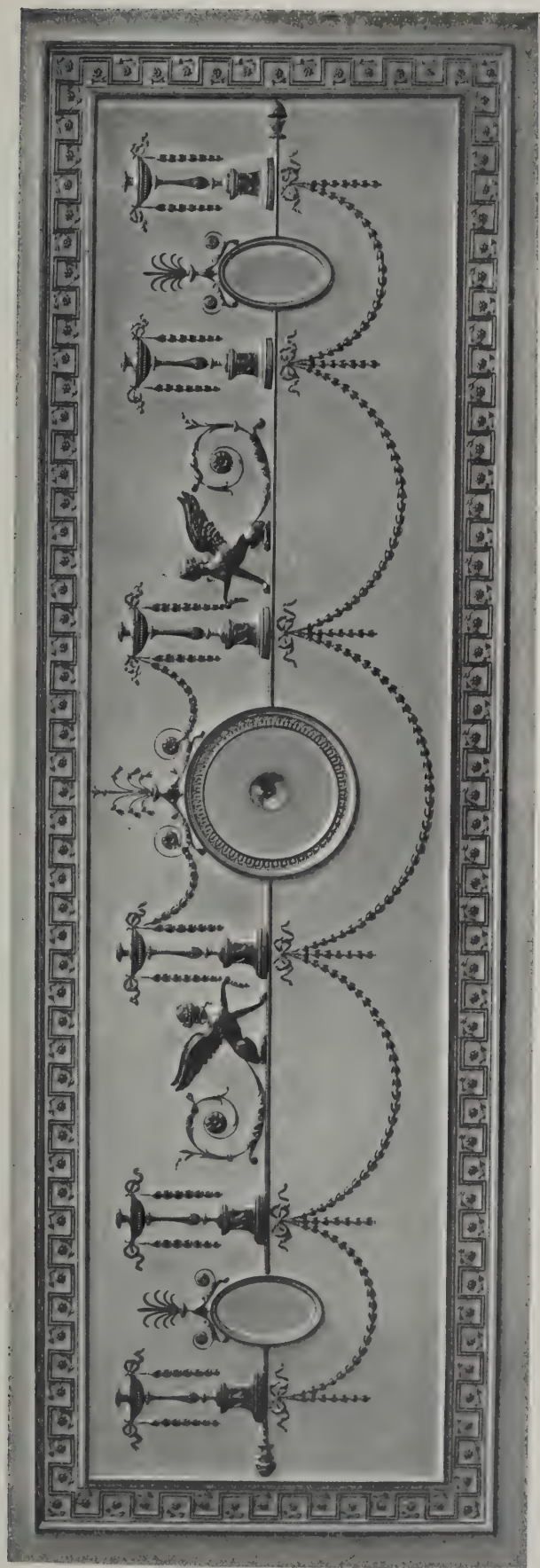


MODERN AMERICAN ARCHITECTURE (SERIES II.). XXVI.—LOBBY, UNION STATION, WASHINGTON.

D. H. BURNHAM AND CO., ARCHITECTS.







DETAILS OF CRAFTSMANSHIP (SERIES II.). XIX.—PLASTERWORK ON CEILINGS, HAREWOOD HOUSE, LONDON (NO LONGER EXISTING).

ROBERT ADAM. ARCHITECT.

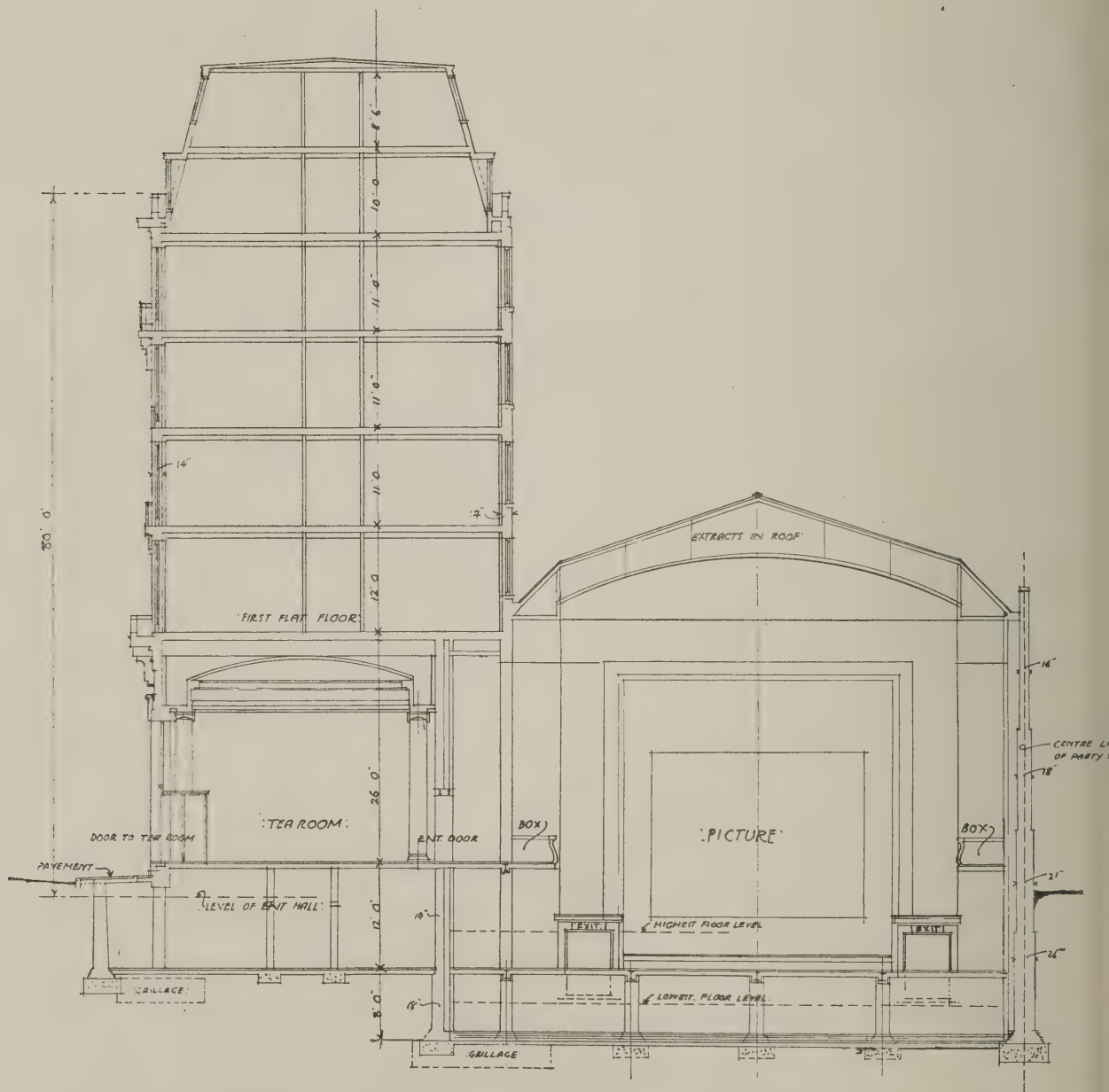






# PROPOSED FLATS AND PICTURE HOUSE HIGH ST. KENSINGTON W

SCALE—8 FEET TO ONE INCH



CROSS SECTION

CURRENT ARCHITECTURE (SERIES IV.), XI.—PROPOSED

ROBERT ATKINSON, F.R.I.B.A., AND









that he is going to be an engineer and not a professor of literature), he will simply become one more of the expensively-educated host for whom there are not enough profitable places in this world. We live in a great age, and we ought to express it in modern terms of building. It is only under the present War conditions, for instance, that the wonderful possibilities of good construction have been revealed. Before the War it was the rule for men to follow the stock methods and sizes given in the stock text-books, but in the construction of factories and other buildings connected with the War it has been found to be quite satisfactory to design trusses and framings of much lighter scantling than was thought possible before: all this as the direct outcome of modern problems being tackled in a modern way. There has been far too much of the old rule-of-thumb methods in building, and in countless cases this has meant an increase in expenditure without any corresponding advantages. I could cite an instance of a large new London building, the steelwork of which was "designed" by an architect of the old school, one who thought this section looked about right and that section seemed about what was wanted. A specialist was called in and went over the design. He had had an engineering training, and by cutting out all the unnecessary steelwork and making reductions in the size of beams, ganchions, and connections which were excessively heavy, he effected a saving of no less than £2,000 on the cost of the steel frame, without in any way jeopardising its stability.

What we especially want to get is a broader grasp of the things that lie before us. The Americans have got such a grasp, and that is why they are so ready to do the "big" thing. Of a score of illustrations that come to mind, take, as an example, that great scheme of Burnham's for the lay-out of Chicago, and the magnificent drawings of it which Guerin was commissioned to make; a scheme, be it remembered, not springing from the imperious wish of a Consul or an Emperor, but put forward by a Commercial Club, *i.e.*, a body of business men, imbued with a high civic sense. In our own metropolis how few are the "big" things. St. Paul's, the British Museum, the Mall, the Embankment: we soon run over the list of them. Our stations are huddled in the midst of mean streets and there are not half a dozen fine vistas to be found in the whole area. That is why it is good to see students given problems on a grand scale. The parochial mind thinks that the student will never get a Royal Palace or a course to design, and therefore he would be much better occupied with £30 villas or shop premises on a narrow frontage, this being the sort of work he will be most likely to carry out in actual practice. But there is a small mind is hopelessly wrong, for it is this limitation of the outlook to the little things that has killed all sense of civic spirit; among the lay public it breeds the petty schemes of the Council Chamber, and among architects it breeds dull wits that can never rise to the great occasions. We need to get rid of this small outlook, and in its place to set up something better and bolder, something which, when the time comes to deal with a National Memorial, will not be content with a scheme combining "beauty with utility," and is on a niggardly scale, but will be heart and soul for a grand monument worthy of the men who have given their lives for the nation's cause. Truly, as Professor Methaby says: "We have lived under an anarchy of opinions, and have hardly yet risen to the idea that to produce finely we must first get some approach to a common mind which shall be set in that direction—a national and civic psychology which shall be interested in inducing a high tide in civilisation, in art, learning, and life."

UBIQUE.

## THE PLATES.

### *The Admiralty, Petrograd.*

THE Classic buildings of Petrograd are a revelation to those who have imagined that Russian architecture is wholly of that mediæval style which is typically represented in the Kremlin. The Admiralty, dealt with in the article on the next page, and the Bourse, illustrated in our issue for December 6 last, are both splendid achievements, ranking among the finest classical buildings in Europe.

### *Prince of Wales Picture House, Liverpool.*

The bane of that essentially modern building, the cinema or picture house, has been decorative plasterwork, not that this material is not admirable for such purposes, but that it has been modelled on coarse designs and employed with a flagrantly extravagant hand. In the picture-house at Liverpool, now illustrated, we see a far more reserved and far more successful use of decorative plasterwork, and the scheme is noteworthy also for its employment of tapestry pictures on the wall bays, which, we are told, are extremely effective and pleasing. Mr. George L. Alexander, A.R.I.B.A. (of the firm of Atkinson and Alexander, London), and Messrs. Matthew Watson, Landless and Pearce were the associated architects. The fibrous plasterwork was executed by The Bromsgrove Guild. The general contractors were Messrs. McLaughlin and Harvey, of Belfast.

### *Lobby, Union Station, Washington.*

The Union Station at Washington is one of the many big schemes of that big man—the late Mr. Burnham, of Chicago. Like other important termini in the States, it is characterised by a breadth of treatment which is, unfortunately, absent in our own railway stations. This lobby, for instance, though only a minor part of the scheme, is on ample lines and richly embellished. It has been said that the beginnings of modern American architecture date from September, 1890, when Messrs. Burnham and Root were appointed "constructing architects of the Columbian Exposition," and a month later Mr. Burnham was made Chief of Construction. This was the genesis of a great development.

### *Plasterwork in Harewood House, London.*

Harewood House, which stood until recent years at the corner of Hanover Square and Harewood Place, contained some admirable Adam ceilings, as may be judged from the two details shown on the plate—the upper detail being from the ceiling of the great drawing-room on the first floor, and the lower detail from the ceiling of the dressing-room on the ground floor. The ceilings of Robert Adam are among the most remarkable and daring excursions of his invention, and they form the one department in which his contemporaries were slow to follow him. Beyond the occasional and superficial resemblance to vaulted or ribbed surfaces, there is nothing in these ceilings which originates in constructional motives; they are frankly ornament, and are, moreover, a complete departure from the earlier methods of plaster decoration.

### *Flats and Picture House, Kensington.*

This scheme by Messrs. Atkinson and Alexander has not been carried out. It is interesting, nevertheless, to illustrate it, because of its unusual combination. The drawings showing the interior arrangement need no explanation, as they speak for themselves, but with regard to the sketch elevation reproduced on page 35 we should like to point out what an admirable result this promised. It is indeed much to be regretted that the scheme was not carried into actuality.



## THE RUSSIAN ADMIRALTY.

THE period of Alexander I., from 1801 to 1825, marks the zenith of the Classic movement in Russia. Then was witnessed the full development of French artistic influence, and this in spite of the fluctuations of the Emperor for and against the domination of Napoleon and France's bid for world-power. At this period, the early nineteenth century, Grand Prix designs were accessible to Russian architects, and even those Frenchmen who journeyed to Russia were determined to perpetuate in the concrete the paper dreams of their compatriots. New buildings in a modern style and of enormous scale were immediately required to meet the changed conditions of Russian officialism, and in the works of Zakharoff,

Neptune and Amphitrite. Facing the Neva the wings are terminated by two symmetrical pavilions, one of which is shown by the illustration on this page.

The side elevations of the building are handled with great skill, dissimilar features being contrasted without loss of sympathy. Further, the purpose and character of the building is conveyed to the spectator in two ways; that is to say, its official and administrative aspect is indicated by stately colonnades, and its real purpose is forcibly suggested in the pavilion blocks at the ends, each crowned by an attic surmounted by a circular drum and symbolic tripod, and each having a large arcaded central bay decorated in bas-relief with bronze Victories.



THE ADMIRALTY, PETROGRAD: SIDE ELEVATION AND PAVILION.

ZAKHAROFF, ARCHITECT.

Thomas de Thomon, and the Italian Rusca, is to be seen the definite triumph of the Classic tradition as it was understood throughout Europe in those days.

The magnificent range of buildings forming the Admiralty at Petrograd displays the finest expression of the Classic style in Russia. It is the chief work of Adrien Dmitriévitch Zakharoff, who, born in 1766, studied in Paris under Chalgrin from 1782 to 1786 and completed his architectural training in Rome. Zakharoff's works in general are sympathetic with the work of the Frenchman Thomas de Thomon, who in turn was inspired by the teachings of Gondouin and Le Doux.

The Admiralty stands at a point of intersection of the Quay of the Neva and of the Nevski Prospect, forming a veritable topographical centre. The side elevations, facing respectively the Senate and the Winter Palace, are harmonious with a central portico and two colonnaded wings; their sole ornamentation consisting of mascarons, alternately representing

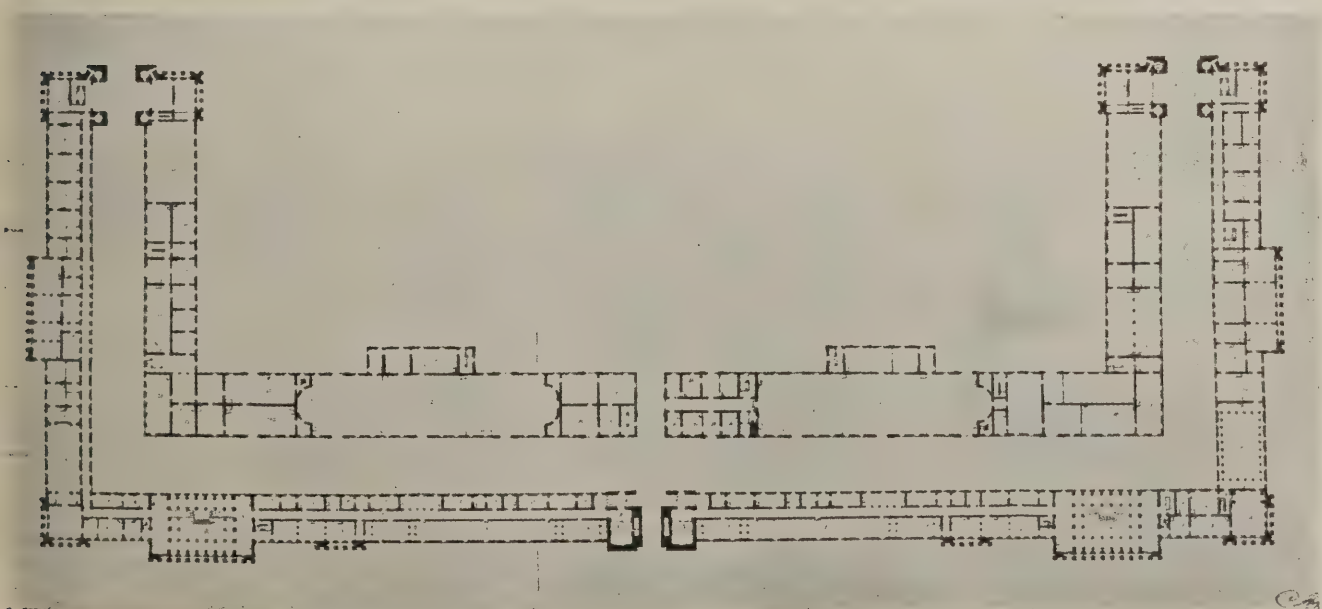
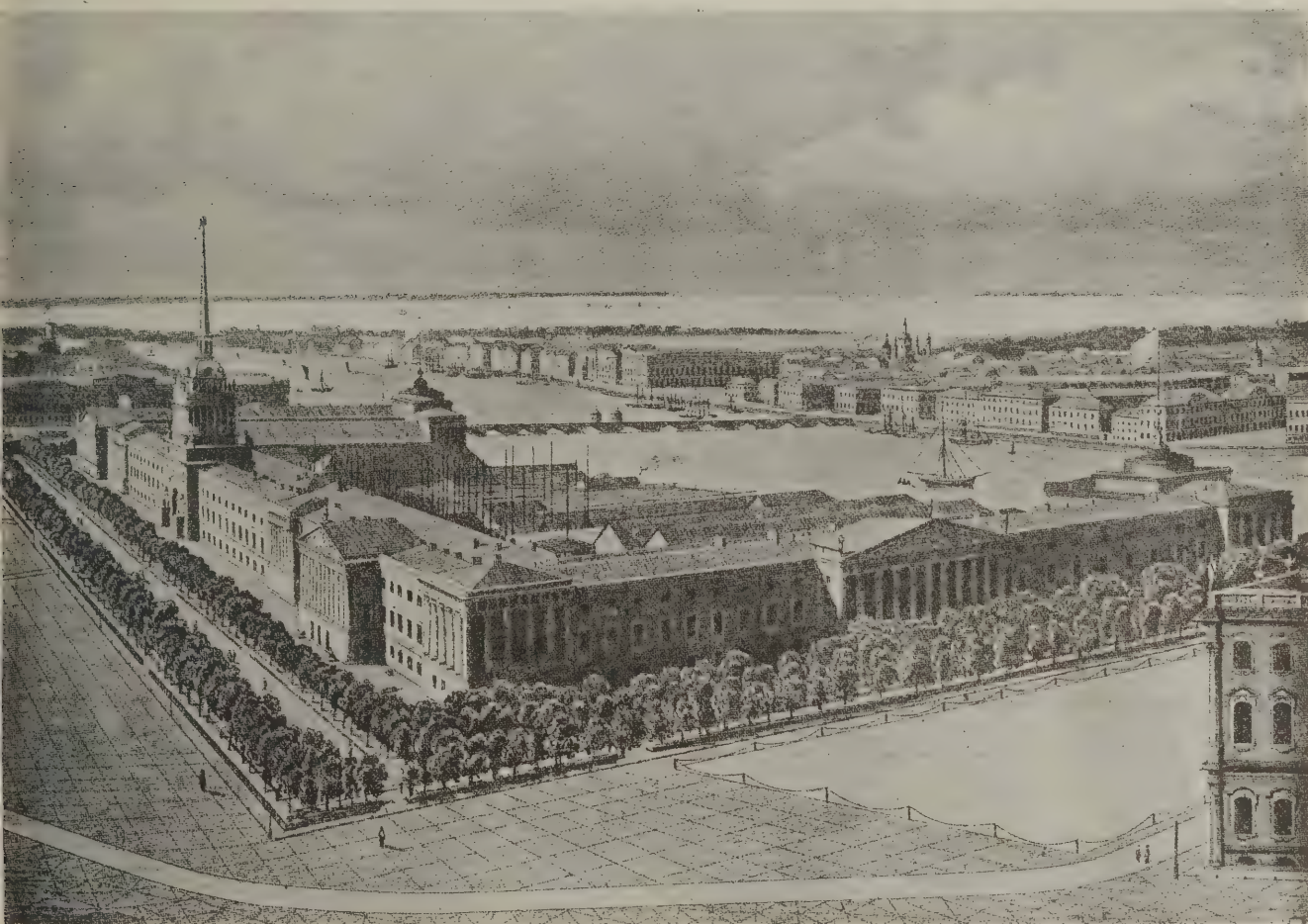
Few modern buildings in Europe or America rival the chaste design of the Russian Admiralty. In it we see a noble example of the distribution of great architectural masses. A discreet use of colour outlines the grand lines of the architectural treatment. It is the most perfect model of the period of Alexander's reign. But even here the vandal hand could not be stayed. In 1871, on the pretext that the quays were no longer required, and that, the works having been removed to the new dockyard, the internal court was not of any practical use, the Minister of Marine so portions of the open space which formed the old dockyard facing the Neva (as seen in the old print reproduced on the next page). Blocks of flats were erected between the beautiful end pavilions, completely masking the golden flèche and spoiling by their pretentious form the two lateral wings, so that to-day the effect the original conception by Zakharoff is altogether ruined.

The first Admiralty building was founded by Peter



the Great in 1703. Zakharoff respected in every scruple the lines of the old plan, the moat, and the general silhouette of the previous building; but from the standpoint of academic design the new plan is modern, and a vast improvement on the old. It is also interesting to note that Zakharoff retained *in toto* the original tower, built by Koroboff, incorporating it within his new tower over the main gateway, and allowing the original golden flèche, carrying a model of a ship in full sail, to dominate the scene. This difficult feat of design he accomplished by building a square tower about the lower part of the old one,

adorned with twenty-eight columns, and arranging this square tower in the form of a gallery from which the old structure can be viewed—a truly remarkable and early instance of the scrupulous preservation of an ancient building. The design of the monumental entrance follows the *motif* of a triumphal arch, surmounted by a frieze of sculpture, where is depicted Peter the Great receiving the trident of the ocean from Neptune. Each side of the arch, at the level of the base, is embellished with two strong pedestals of granite, and on these pedestals stand two groups of three caryatides supporting terrestrial and celestial



BIRD'S-EYE VIEW OF OLD PETROGRAD AND PLAN OF ADMIRALTY AS ORIGINALLY LAID OUT.



globes. The groups of statuary were executed in 1802 by the sculptor F. Chtchédrine, pupil of d'Allegrain, and rank among the best works of the time. The illustrations reproduced as a plate in this issue show the main façade and details of its dominant features.

The interior of the Admiralty embraces many fine rooms, and there is a splendid staircase hall. The general character of the interior treatment may be gauged from the view of the grand staircase on page 27 of this issue.

## CORRESPONDENCE.

### *The Garden City Idea.*

*To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIRS,—I am glad to notice in your current issue that you are among those who realise that there is something in the Garden City idea that may be found of value in dealing with the problems of housing and factories that will demand attention after the War. When it is remembered that the Garden City scheme has been before the public for not far short of twenty years, and that the actual experiment at Letchworth has been in existence for more than half that period, it is a little strange that so little is heard of the Garden City proposals in connection with the preliminary consideration of the great housing problem that will confront the country when peace comes. It may be that the Garden City has dropped a little out of sight in the last few years, having been eclipsed by the vigorous and able town-planning propaganda that the times have seen. And it is also true that, in comparison with other housing proposals, the Garden City does appear to be a little idealistic and Utopian. Town planning is within the range of any town councillor, and even garden suburbs are but a detail of town development that is easily grasped and put into practice. But the idea of founding a new town is another matter altogether; and except in a tentative fashion here and there, and even in the face of the example at Letchworth, the value and practicability of the Garden City is almost entirely left out of account.

Yet the fact remains that the Garden City contains the most positive, adequate, and practicable idea for dealing in a permanent manner with the problem of housing that is to be found among thinkers or practical men to-day. It aims at the organisation of industrial tendencies along the lines of traditional English town life. The tendency of industry to escape from the limitations imposed upon it by the great towns to new areas, where physical and economic conditions are more friendly to its development, is the element that the Garden City seeks to utilise for the purpose of bringing prosperity to little English towns and villages that have long been stagnant or decaying. The decentralisation of industry, combined with the revival of the small town, is the Garden City idea. And the revival of the small town, by bringing new, vigorous populations to the villages and little towns, so that people may live in communities of thirty, forty, or fifty thousand souls, means, among other things, new life to agriculture by bringing men back to the soil. For in small towns men may have gardens and fields, attached to or near their homes, where they may grow their own food and attain to something of that partial independence of industry that was common before the industrial revolution. At Letchworth, the only existing example of a Garden City, three old villages were the starting points of the new development, and the new town has grown up from them. And though the town is not yet complete, and though it is possible to criticise it in detail, and it is even yet too early to speak of its individual success, yet it has established

without any doubt whatever that the Garden City idea is workable, and that it does all that has been claimed for it. There are, in connection with Letchworth, particular problems that have arisen out of the circumstances of its foundation and growth: the simple fact that it was begun without precedent, that it itself has established precedent, is alone sufficient to account for difficulties that are likely to remain peculiar to it. But after everything has been said, it remains clear that Letchworth has a great lesson to teach us in showing what a bold and enterprising method of dealing with housing and factories and the land can accomplish. It is to be hoped that the lesson will be learned, and that the new housing that peace will see the country engaged upon will be inspired by the example of Letchworth, the true English example of town-building.

It may be pointed out that the economic basis of the Garden City is the ownership and control of the land on which it is built. Without that element the Garden City is not possible. I do not wish to elaborate on that point; but there can be no doubt that whatever the Garden City is able to accomplish in the way of the permanent solution of the problems with which it sets out to deal is possible only on condition of the economic benefit that arises from the ownership of its land. The Garden City provides a form of ownership of land in the public interest that in itself is worthy of study and emulation. The new industrial conditions that industry will need for its expansion when war is over, the new homes that men of all classes will demand after their war experiences, the scope for vigorous social enterprises that the new times will seek, may all be found in the adoption of the Garden City idea and the development of towns in accordance with it. And the bearing of the idea upon questions of social and individual health upon child life, education, and agriculture among others, is not the least significant aspect of it.

This is a question for the architects', surveyors', engineers', and town-planners' professional institutions to take in hand jointly on behalf of the State. Will they allow an insignificant man to make the suggestion to them?—Yours, etc.,

C. B. PURDOM.

Reserve Brigade Artillery.

### *Damp Spots on a Wall.*

*To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIRS,—Referring to the inquiry under this head in your issue for last week, I suggest that the trouble is very likely due to some cold, hard, smooth plaster being used. I have known many cases where mildew has occurred in consequence of moisture condensing on plaster of this kind, and in particular one case in which internal walls and even a stud partition had become actually mouldy. Builders are tempted to use hard, quick-setting plasters when time is short, and the result is often unsatisfactory.

London, W.C.

ARTHUR KEEN, F.R.I.B.A.

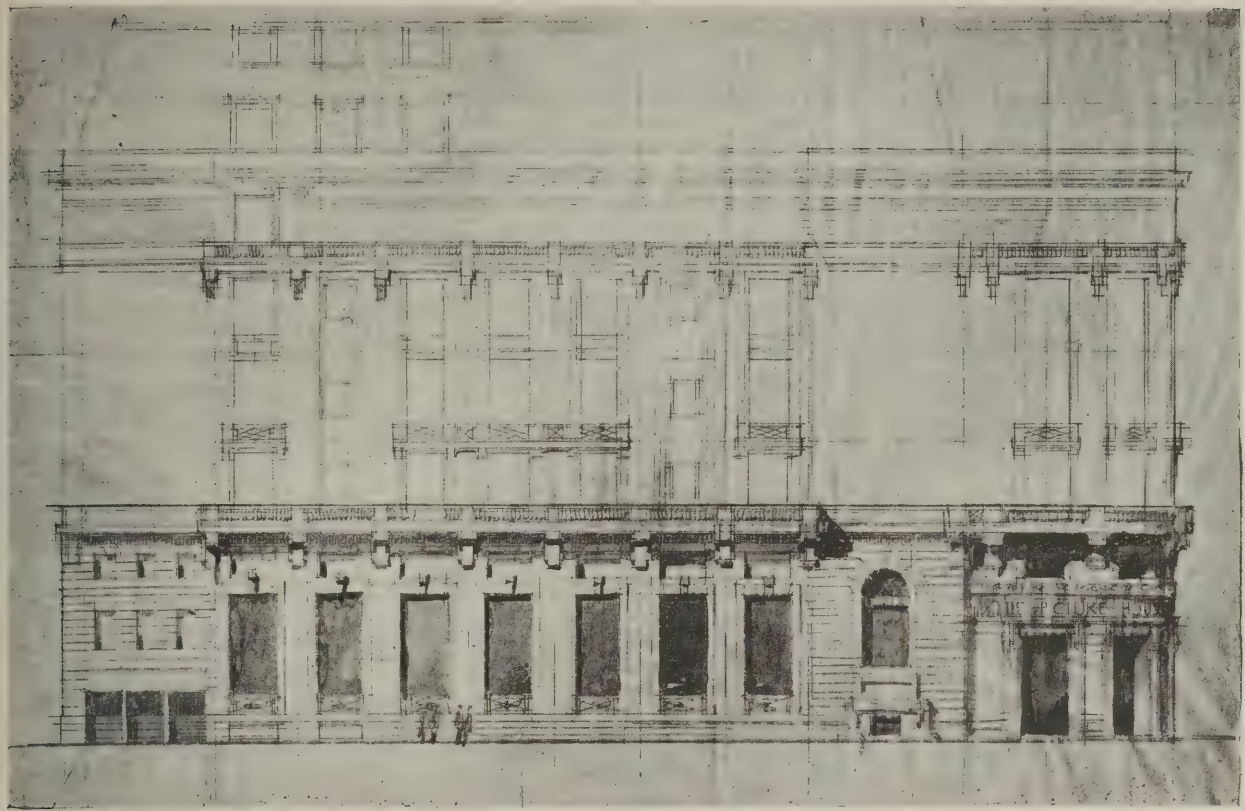
### *An Architects' Memorial.*

*To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

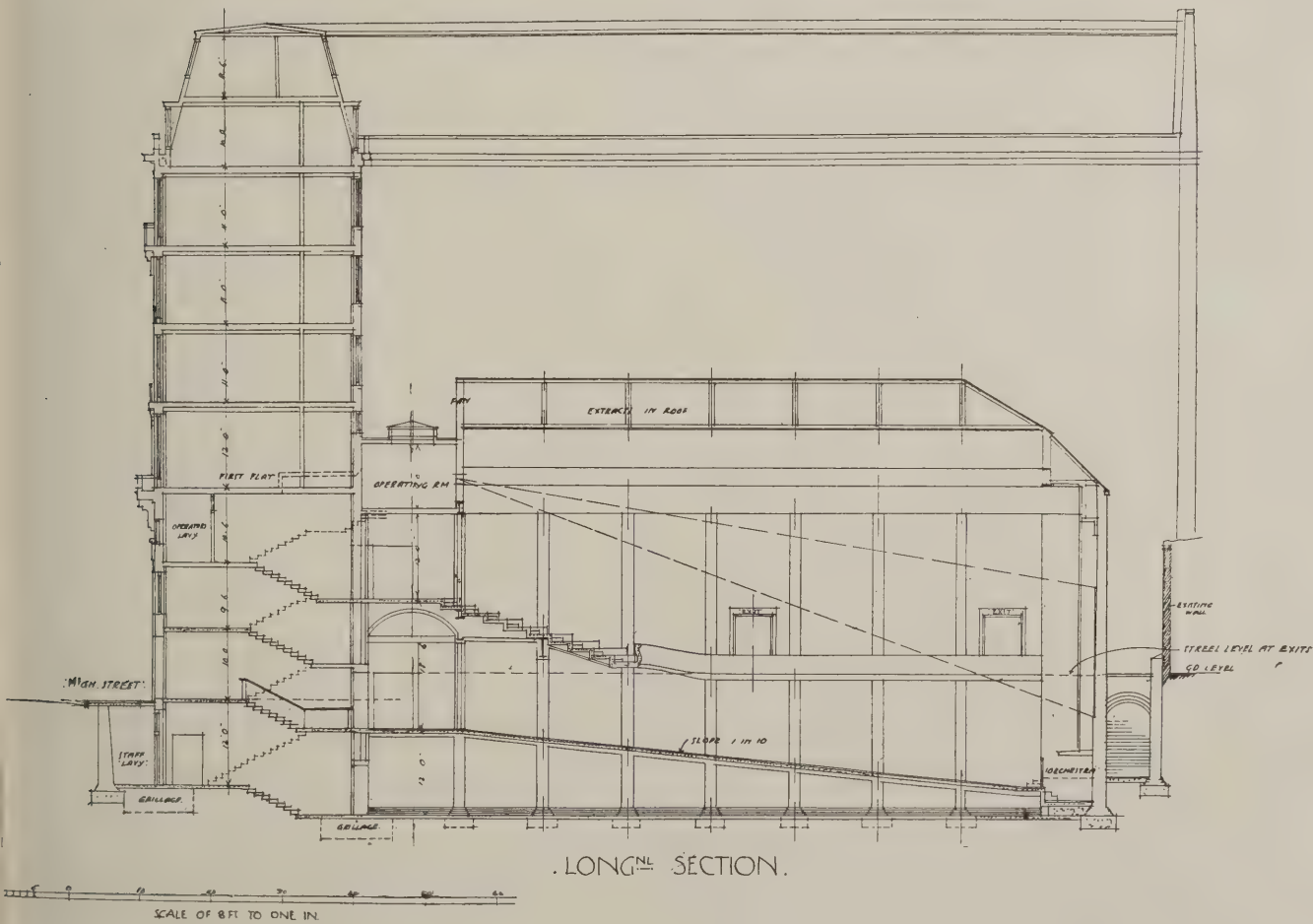
SIRS,—Amidst all the proposals for War memorials, I have seen no suggestion—except a passing remark in your own columns—for a general memorial to the numerous architects who have died for their country. Individual and scattered memorials there will of course be; but should there not be a general memorial, signalling the manner in which the profession rose to the call to arms? What form it should take, and where it should be placed, are details that should receive careful consideration by the properly constituted authorities; and it is hardly too early to take up the subject.

A. M. G.





Sketch Elevation.



PROPOSED FLATS AND PICTURE HOUSE, HIGH STREET, KENSINGTON, LONDON, W.

ATKINSON AND ALEXANDER, ARCHITECTS.

(See page 31.)

## PROSPECTS FOR ARCHITECTS' ASSISTANTS AFTER THE WAR.

The Council of the Architectural Association has recently considered a report containing suggestions for dealing with the requirements of members of the profession returning after the War. Below is a summary of the report, which we take from the Association's "Journal." The Council recognises that it may be some time before it is necessary to put the scheme into operation, but it feels strongly that the matter should be dealt with immediately so that arrangements may be perfected in readiness for such time as they are required.

### Summary of Report.

As far as can be conjectured at the present time, it would appear that immediately after the War the architectural profession will experience a period of considerable activity as a result of the inevitable desire to push forward, with as little delay as possible, building schemes which have been postponed during the War. From all sides one hears in the profession of work which is to be proceeded with immediately conditions allow, and although there may be a certain amount of delay in building, owing to congestion in the manufacturing trades and so on, it may be fairly assumed that the architect himself will be able to proceed with his part of the work almost as soon as peace is declared.

During the War the normal annual influx of young assistants to the architectural profession from the schools and by pupilage has ceased entirely, and the number of assistants who have fallen in the War will affect the profession to a marked extent.

Briefly, then, at the end of the War, whilst there will be an accumulation of some years' delayed work to be proceeded with, the number of assistants will be less than it was before the War, when there was work for all.

Whether these assumptions are justified or not, the following suggestions for dealing with the return of architects' assistants after the War may be of value. They deal with:

1. Providing facilities for assistants to be brought into touch with would-be employers.
2. Helping the temporarily disabled and unfit.
3. Helping those who, as a result of the War, find themselves totally disabled from following the architectural profession further, and assisting to become qualified architects those disabled from following other callings.
4. Providing means for those who desire it to recover such architectural proficiency as they may have lost whilst serving.

The Architectural Association has always kept a bureau for unemployed assistants which has been recognised by practising architects as a centre from which they could obtain assistants. During the War, the rule that only members of the Architectural Association when unemployed could use the bureau has been waived, and it has been opened to the profession generally. It is suggested that this arrangement continue to be in force for such period after the War as may be determined. It is suggested that the scope of the bureau be widened, and that it be given some such title as "The Architectural Association Employment and Information Bureau for Architects returning from the Army." Its scope should not be limited in any way,

but it should be allowed to develop as experience showed to be necessary. As the Architectural Association War Service Bureau has been, since the commencement of the War, the recognised centre for assisting members of the profession in Army matters, so should the proposed new bureau be available for any architects' assistants seeking advice and assistance on any matter connected with the return to civil life.

In practice, it will probably be found that most of the applicants to the bureau will come under categories 1, 2, 3, and 4, and the following proposed schemes for dealing with them are put forward.

1. *Providing Facilities for Assistants to be brought into touch with would-be Employers.*

A register of disengaged assistants should be kept, and also a register of architects requiring assistants, arrangements being made, if possible, to work in conjunction with the provincial societies, who would also be able to consult the bureau on behalf of any of their members coming within either categories 2 or 3. Information should be collected as to openings in the Colonies and abroad, and assistance especially should be given to those who are compelled to seek another climate on account of broken health.

2. *Helping the Temporarily Disabled and Unfit.*

There will probably be a number of assistants at the end of the war who, for some time, through various disablements and nervous disorders, will not be capable of taking up the full duties of an architect's assistant, but who at the same time will be able to follow a light employment, and who, indeed, will benefit by so doing. To meet such cases, it is suggested that a drawing, tracing, and photo-printing office should be formed, which should undertake all such work as commercial offices of this nature usually undertake. Such an office would undoubtedly, in the first instance, need subsidising, but in a short time it should pay its own expenses, and provide a fair wage to all employed. Profits, if any, could be given to benevolent schemes in connection with the profession. It should be managed on business lines as far as practicable, but its object would be defeated were not a certain amount of latitude allowed to those employed. Probably, therefore, a small committee of, say, not more than three, should have the control of the affairs, and should be the arbiters upon who should, or who should not, be employed, and what wages should be paid. Under the Committee, a paid manager (himself a disabled soldier) should be appointed. There is no reason why such an office should not be a permanent institution, as there should be, even in the slackest times in the profession, no difficulty in keeping it supplied with work, and in any time of acute unemployment in the future it would be a very useful means of providing work.

3. *Those totally disabled who are prevented from following the architectural profession further.*

There will be probably very few coming under this category who will need to consult the bureau, as there are already many institutions in existence for re-training the disabled according to their abilities, but at the same time, as the Architectural Association has done so much to encourage members of the profession to join the Army, it would seem that it is its duty to be prepared to help any who, through their service in the Army, are compelled to give

up the profession for other work. The bureau should collect all information about re-training schemes, so that such information should be ready at hand for anyone in the profession needing it, and the Architectural Association should use its influence to get the best possible training and help for those consulting it. It should also co-operate, where practicable, with the various training committees in assisting men from other callings who wish to train as qualified architects.

4. *Those who desire to recover such architectural efficiency as they may have lost while serving.*

The question arising under this category is closely connected with the problem of providing for the needs of members of the profession returning from the war, although, perhaps, it is one for the Architectural Association to deal with as an educational body rather than the proposed bureau. It is suggested that arrangements be made to help those who wish to be "coached" up again in professional matters, after three or more years' absence from the architectural world.

## PILE-DRIVING AND THE SUPPORTING POWER OF PILES.\*

BY HENRY ADAMS, M.Inst.C.E., etc.

The smallest piles are driven by a "beetle," which is a heavy long-handled wooden mallet weighing about half a hundredweight. For driving larger piles up to 10 in. square an apparatus called a ringing engine is used. It consists of a light framework with a pulley at the top and a rope over it, connected at one end to a ram weighing from three to five cwt., and at the other end attached to four or more short ropes or tails for pulling by hand power directly applied. One man is allowed to each 40 lb. weight of ram, and two can hold on to one tail. By this means a rapid succession of blows is given with a light fall. The ram is in some districts called a tup, or trip, and in London is very often called a monkey, but the monkey is properly only the slip-hook that runs up and down to lift and drop the ram in the large apparatus.

Ordinary piles are driven by what is called a "pile engine." It is virtually a large hammer, the weight being arranged to fall freely and strike a succession of blows upon the head of the pile. It consists of a tall framework, with vertical guides on the face to keep the hammer or ram in a direct line with the head of the pile. The base of the pile engine is placed just above the finished level of the pile head, so that in driving long piles a high framework is required. It is, however, sometimes impossible to get the framework high enough for this, and it is then set 6 ft. or 8 ft. above the finished level, and a punch, dolly, or follower, of hard wood, hooped at both ends, is used on the head of the pile when it gets as low as the base of the frame, but the blow is not so effective and the method should be avoided when possible; it is said to reduce the effect of the blow one-third, more or less, according to the rigidity of the material. Becker states that the most convenient weight in pounds for a dolly is—

$$\sqrt{(W + W_p)}, \text{ where } W \text{ and } W_p \text{ are in pounds. (1)}$$

\* Abstract from a paper read before the Concrete Institute, December 21.



but there does not seem any advantage in having a rule of this kind, even if suitable, which this is not, as the size will generally depend upon circumstances other than weight of ram and pile. Nothing could be more simple or suitable than to use a piece of the pile timber, cut to the length required and hooped both ends, but an ideal dolly would be of oak 9 in. square and hooped square at both ends.

(2) The length of a pile is generally determined by the local conditions of site and soil, the sectional area chiefly upon the load it has to sustain, usually the ratio

$$\frac{L}{A} = \frac{1}{4} \text{ to } \frac{1}{8}$$

but no general rule can be laid down, as it depends to some extent upon the unsupported length above-ground.

In ordinary cases the ram is raised by a crab-winch, worked by three or four men, and is connected to the rope or chain for lifting by an intervening slip-hook or "monkey," so that it can be suddenly disconnected and allowed to fall freely when it has reached the required height. In the usual way the ram can only have a small fall at the commencement of driving because of the height of the pile, but the resistance is also small at starting, and as the pile goes down the fall can be increased. If it is then desired to retain a uniform fall, the rope which releases the trigger of the monkey is made fast to the head of the pile, and is by this means pulled automatically at a constant height above the pile whatever its position may be. Where there is much piling to be done, the hoisting of the ram is usually effected by a small steam-engine attached to a vertical boiler and placed close alongside. By throwing a clutch out of gear the chain is rapidly lowered to enable the ram to be again connected, and much time is saved. Piles penetrate quicker and more easily when driven with a minimum interval between the blows, as the soil has then less time to settle and adhere to the pile.

#### *Pitching and Driving.*

In pitching a pile care must be taken that it is started in the right place, as it cannot be shifted, but if the point is not truly in line with the axis of the pile, or gets pushed to one side by meeting an obstruction before it has entered very far, the lower end of the pile will be drawn over to the side to which the point leans. In spite of the greatest care they will sometimes be found slightly out of position, and they have then to be drawn back into place by chains, twisted like a surgeon's tourniquet, while being bolted to the other timbers. If it be necessary for them to be scarfed, the upper portion can be adjusted by cutting the scarf a little out of line to suit. All piles are not required to be vertical; in building jetties the outside row of piles is often doubled, the outer pile being a raking one, at 15 to 30 degrees from the vertical, for increasing the stability, acting like a buttress. At the corners of jetties the outer piles are usually raking both ways, say, about 15 degrees from the vertical. When necessity arises piles may be drawn from the bed of a tidal river by lashing empty barges to them and letting them lift by the tide. Against a river wall or round the foundations of a bridge piles should be sawn off by a diver as low as he can get at them in preference to drawing them, to avoid any risk of scour and undermining of the foundations taking place. On land a pile may be drawn by lashing a

short piece to the top and then prizing it up by another baulk used as a lever, or by a pair of powerful jacks.

#### *Weight of Ram.*

One of the most interesting questions in connection with pile-driving is the proportion between the weight of ram and the fall to produce a given result. The ram usually weighs from 5 to 30 cwt., and is allowed to fall, say, from 6 to 20 ft. Upon a superficial consideration it would seem that a ram of 5 cwt. falling 20 ft. would produce the same result as a ram of 20 cwt. falling 5 ft., as they would both have 5 ft. tons energy, but the proportion of the total energy ( $Wh$ ) which is usefully expended in sinking the pile depends *inter alia* upon the ratio of the weight of ram to the weight of the pile. Some of the total energy is always wasted.

A light ram with a long fall will not have the same effect as a heavy ram with a short fall. In practice it is found that with too great a fall the effect of the blow is to bruise and "broom" the head of the pile, or to shiver the timber instead of to force it downwards. A heavy ram, producing the same effect in distance driven as a light one with greater fall, does less injury to the pile.

#### *The Supporting Power of Piles.*

The sustaining power of a pile depends chiefly upon three circumstances—

- (1) The resistance at the point or shoe to further penetration.
- (2) The friction of the earth on the sides of the pile, and
- (3) The strength, as a column, of the pile above the ground or above the firm sub-soil.

Although it would seem that these are simple elements, each of which could be fairly estimated, the complexity of the case is shown by the numerous formulæ which give results ranging up to about 450 per cent.

The first two factors are usually combined into one formula founded chiefly upon experiments. The best-known formula is that of Major Saunders, U.S. Eng., quoted by Rankine and Molesworth—

$$R = \frac{Wh}{8s}$$

This equation is unitally complete,  $h$  and  $s$  are in the same units of length, and  $R$  will be in the same units as  $W$ . For example, if  $W$  is in tons, then  $R$  will be in tons.

This is the same as calling the safe load one-eighth of the mean resistance to the energy of the blow, assuming it to be expended entirely in penetration without compressing the pile. Although this formula may be good enough for ordinary cases, it can at best be only approximate, and the author compared it with other formulæ which have been given from time to time.

There seems to be no general rule as to the factor of safety it is desirable to adopt; the practice appears to vary from 2 to 10, the former being suitable for dead loads and the latter for live or vibrating loads. Intermediate factors would be produced with varying proportions between the dead and live loads. Obviously unless the ultimate resistance given by the formula is reliable, the resulting factor is unknown.

#### *Reinforced Concrete Piles.*

The advantages of reinforced concrete piles are so manifest that they need no express recommendation here. The chief physical differences from timber piles, as

regards driving and their supporting power, are due to their extra weight and their friable nature. They should be made with slow-setting cement six weeks before driving, but if made with quick-setting cement they must be left eight weeks, because in the latter case the outside hardens first and leaves the interior soft. They should be driven by steam or drop hammer with a 3-ton ram, having a fall of 3 ft., with a steel helmet filled with sawdust, and preferably without a dolly.

In America the use of a water jet is found to greatly facilitate the sinking of concrete piles.

Hollow cylindrical reinforced concrete piles have been used at Southampton, Newcastle-on-Tyne, and Liverpool. They are lighter and cheaper than solid piles and more effective. Those at Brockelbank Dock, Liverpool, were 20 in. diameter. Reinforced concrete piles of circular section are easier to drive than square piles, and as they have no sharp angles are less liable to be damaged by coming into contact with boulders, etc.

As reinforced concrete piles are made horizontally, care must be taken in lifting them; the points of attachment for lifting should not be less than half the length apart, and if lifted with one end on the ground the attachment should be one-third the length from the other end.

The reinforcement rods (about  $2\frac{1}{2}$  per cent.) should preferably be hooked at the top and electrically welded together at the bottom. They should be bound helically by, say,  $\frac{1}{4}$  in. wire, 4 in. pitch, carefully secured at the top.

It is a debatable question whether reinforced concrete piles are more easily and economically driven to the required depth by a drop hammer or by a steam hammer. The probability is that upon a trial with equal weights of hammer the advantage of the steam pile-driver in the case of wooden piles would be maintained with reinforced concrete piles.

Screw piles of reinforced concrete have been patented by Mr. Vernon Inkpen, of Portsmouth, and they would probably be found very useful in a peaty or wet sand foundation.

## BUILDING BY-LAWS: THE NEED FOR REVISION.

In a letter to the daily press, Mr. Gordon Allen, F.R.I.B.A., calls attention to the increasingly urgent need for revision of existing building by-laws.

Even at the present time (he writes) a certain amount of building is going on, and must go on, for the lamentable shortage of cottages almost everywhere has become a serious menace to the production of food and other necessary commodities. And there is not the slightest doubt that this house famine is largely due to the building regulations now in force, which have had the effect of deterring or adding needless hardships to the efforts of cottage-builders. Both the cost of building and the rate of interest are at present so high—and will probably remain so after the war—that the abolition of many of these out-of-date and inconsistent enactments has become a question of national importance. Having been founded on the "model" series issued forty years ago by the Local Government Board, all building by-laws have long become obsolete. They take no account of modern improvements or the use of new materials (such as concrete), and it is no exaggeration to say that most of the progress made in the way of



economical construction has been dependent on loopholes that may be found in them. These by-laws were originally drawn up for governing building procedure in town areas; they have mischievous consequences when applying in rural districts. To keep up a high sanitary standard and to prevent flimsy construction is essential. But some of the present limitations, however imperative they may be in crowded centres, are unnecessary in the country, where buildings are often of a single storey and far apart from each other. The danger of fire or infectious diseases spreading to neighbours is non-existent.

How inconsistent the "ridiculous" by-laws are (Mr. Allen continues) can be seen in some neighbourhoods where a different set is in operation on opposite sides of the same street. Then take as an instance the question of room heights. This is an important matter where cost is the main factor (as it always is when cottages are being considered), for high rooms mean expensive high walls. Some local authorities insist on ceilings being 9 ft. up, but say nothing as to the length and width of rooms, although floor space is far more essential than abnormal loftiness. Rooms 7 ft. 6 in. or 8 ft. high are much warmer and cosier, and can be equally well ventilated by a proper arrangement of opening windows. And a low cottage, besides being cheaper than a high one, is more in accord with surroundings of helgerow and coppice. There are districts in which the tops of windows may be 6 ft. above the floor; elsewhere this height has to be 7 ft., and sometimes 7 ft. 6 in. (which once cost a client of mine an extra £100). As an actual example of the waste of money caused by differing drainage regulations I can mention two groups of munition workers' cottages I have recently been engaged on, which were built within a few miles of each other by the same contractor. The varying by-laws made a difference for the drains alone of more than £20 per dwelling.

## A NEW CEMENT INDUSTRY.

In these days, when cement-concrete is playing so important a part in the construction of various classes of works, the necessity of manufacturing cement in the countries of Overseas Britain is imperative. Take Queensland for instance. The importation of cement into Queensland amounts to 160,000 tons per year, and the bulk of it comes from New Zealand, New South Wales and Hong Kong. At last, however, a local supply is to be assured, a well-equipped cement works is now being constructed by the Queensland Cement and Lime Co. at Darra, near Brisbane. The work of erecting the buildings and installing the machinery has been in progress for about twelve months, and it is estimated that the outlay will involve about £200,000. The works are being constructed on a huge plan, and although the estimated output will be 30,000 tons of cement per year, provision has been made to double this output.

The works are being constructed to manufacture cement by what is known as the "wet" or "slurry" process, the raw materials being ground with about 40 per cent. of water. This permits of a better mixture, more perfect grinding, and elimination to a large extent of the dust nuisance. The limestone is obtained on the company's leases, where a complete crushing and grinding plant has been

installed. The crushing station is connected with the railway by four miles of permanent line, constructed and owned by the company. The clay is obtained from the ridge immediately above the works, whilst suitable coal is procurable from several of the pits in the adjoining Ipswich coalfield. The whole of the machinery, costing approximately £80,000 to £100,000, has been purchased in Great Britain or Australia.

## CONVERTING AN ORDINARY SCHOOL TO AN OPEN-AIR SCHOOL.

Bowling Back Lane Council School, one of the oldest in the city of Bradford, has been recently transformed into an open-air school, and the experiment has aroused widespread interest. Already two or three deputations from other education authorities have visited Bradford for the purpose of inspecting the school.

When the school was built in 1874 the district still retained something of its original country aspect. In the meantime mills and cottages have sprung up chaotically in the vicinity, where there is a large gasworks.

The school had come to be regarded, when the committee decided upon their experiment, as a slum school which demanded special attention in order that the health of the children attending it should be assured. It was a very substantial building, with good high rooms, and was in excellent condition: but to convert it into an open-air school was something of a problem.

The problem has been solved in an ingenious way. The ground plan of the old building might be roughly represented by the capital letter T. The cross-bar of the T held the assembly rooms for boys and girls, along with class-rooms; and there were class-rooms and other accommodation in what may be called the tail of the T. The alterations that were carried out involved converting the cross-bar of the T into class-rooms and lowering the windows that looked out behind in the direction of the tail of the T, or the "tunnel," as it was called. The "tunnel" was converted partly into cloak-rooms and lavatories, and partly into a large assembly hall. Then from each side of the "tunnel," and at right angles to it, were built two open-air teaching verandahs.

The four open-air teaching verandahs are like pavilions divided into sections to accommodate different classes, and the whole of one side of each verandah is a kind of glass doorway which can be completely or partly opened according to the state of the weather. There are verandahs for boys, girls, and infants, and they are all separated by courtyards which are partly roofed with glass. By lowering the windows on the under-side of the cross-bar of the letter T access is given to the courtyards, and the class-rooms in the main part of the old building—the cross-bar—become in some measure like the new open-air teaching verandahs. The work has been well carried out at a cost of about £5,000.

All who have inspected the building in its new guise agree that it is an ingenious example of the adaptation of old material and of old school-planning ideas to one of the latest notions regarding the best kind of school plan for children whose health requires special care. And it is established beyond dispute that the health of the scholars has been very much improved.

## NEWS ITEMS.

### *The Scala Theatre.*

Bells United Asbestos Co., Ltd., have recently laid "Decolite" fire-resisting floors at the Scala Theatre, Tottenham Court Road, W.C.

### *Re-Building of Dublin Property.*

The Dublin Castle authorities have received £100,000 as an instalment of the Government's ex-gratia grant for the rebuilding of house property destroyed in Dublin during the rebellion.

### *New Central Electricity Station for Toledo.*

Plans are being completed for a new central station for Toledo, which may have a capacity of 120,000 kilowatts, and cost about £1,200,000. Such a plant will be capable of providing for an increase of 100,000 in population.

### *Partnership.*

Mr. George Hubbard, F.R.I.B.A., of 112, Fenchurch Street, E.C., has, as from January 1, taken his son, Mr. Philip Waddington Hubbard, B.A. Cantab., into partnership, together with his assistant, Mr. William Charles Symes, P.A.S.I., who has been with him for more than twenty years. The style of the firm will be known in future as "George Hubbard and Son."

### *Proposed Roadside Memorial to Mr. A. G. Vanderbilt.*

Surrey County Council has sanctioned the erection of a memorial to the late Mr. A. G. Vanderbilt, at Holmwood Common, and about 60 ft. from the centre of the road, which he used a good deal when coaching to Brighton. Mr. Vanderbilt was drowned in the Lusitania, which was torpedoed by a German submarine pirate.

### *Control of Magnesite.*

The Minister of Munitions has issued an Order prohibiting the use of magnesite and magnesite products for or in connection with (1) the construction or repair of any building (other than a furnace) or any flooring or deck; or (2) the manufacture of any insulating or non-conducting material except under and in accordance with a permit granted by the Minister of Munitions.

### *Waterproofing Cellars.*

Much inconvenience is annually caused to those who possess a cellar and cannot use it on account of winter flooding. A case in point is the cellar of the Hope and Anchor Inn at Hanworth, Middlesex, which was formerly flooded every year to a considerable depth. In the summer of 1913 it was decided to prevent this continual nuisance, and a treatment of Pudloed cement was given to the floor and walls. We learn that the cellar has been perfectly dry since, and is now used for storage in both winter and summer.

### *Famous French Lithographers.*

The seventh exhibition of the Senefelder Club for the advancement of artistic lithography, of which Mr. Joseph Pennell is president, will be opened on Saturday, January 20, at the Leicester Galleries, Leicester Square. A special feature of the forthcoming exhibition will be the collection of lithographs by distinguished French artists, which will be shown together with those of the best living English exponents. Daumier, Gavarni, Delacroix, Forain, Steinlen, Corot, Carrière, Lepère, Legros, Rops, Fantin-Latour, Puvis de Chavannes, Renoir, Toulouse-Lautrec, and Willette will all be well represented.



## NEWS ITEMS

*(Continued from page 38.)**Town-Planning at Portsmouth.*

Portsmouth Town Council has approved resolution to take steps to consider the extension of the borough boundaries and their development on town planning lines after the war.

*London County and Westminster Bank Dividend.*

The directors of the London County and Westminster Bank, Ltd., after making provision for bad and doubtful debts, providing £319,000 for depreciation of investments, and applying £100,000 in reduction of bank premises account, have declared dividend of 9 per cent. for the past half-year (less income-tax), making a total distribution of 18 per cent. for the year 1916, leaving a balance of about £182,290 to be carried forward.

*The Proposed Cuffley Zeppelin Memorial.*

Prohibition by the Ministry of Munitions of any new building work will prevent the erection until after the war of the national monument at Cuffley to commemorate the destruction of the first Zeppelin in England by Lieutenant (now Captain) W. Leefe Robinson, V.C. The fund collected by the "Daily Express" to defray the cost of the monument totals £516 6s. 9d., in addition to which many generous offers of material assistance were received, and also the gift of the actual piece of land on which the airship fell. In view of the building prohibition it is proposed to invest the money subscribed in the new War Loan until the work can be allowed to go on.

*London's Housing Problem.*

The effect of the increase in railway fares is, a correspondent of the "Western Daily Press" declares, already making itself felt in many directions. In particular there appears to have sprung up a sudden demand for houses and residential accommodation in the inner suburbs and in the West End. The explanation, of course, is the natural desire to save the increased cost of railway travel. So far as flats, hotels, and boarding-houses are concerned, there is very little accommodation at the moment to spare. The same may be said of small houses. There are, however, plenty of old-fashioned basement houses to let just outside the area of the city. These of late years have been depreciating in value, and it now looks as if they were going to come into their own again.

*The Greek Islands.*

On January 10, before the Manchester Society of Architects, the president, Mr. John B. Gass, F.R.I.B.A., delivered a lecture on Greece and some of the islands in the Aegean Sea. The lecture was illustrated by about sixty water-colour sketches made by Mr. Gass during his visits to the Near East. Epidauros, the great open-air cure establishment like the sanatoria of to-day, with the temple of Æsculapius and the open-air theatre for 16,000 spectators, still in good preservation, was described, as well as Olympia and the many architectural glories of Athens. Of the islands, Delos, the sacred isle of the Greek confederation and the birthplace of Apollo, is now uninhabited, but the old city has recently been excavated by the French, and is of great interest. The Venus of Milo, one of the great treasures of the Louvre at Paris, was discovered on the island of Melos, where further excavations are being made

by the British School at Athens. Samos has Home Rule, and is one of the most prosperous of the islands, with some interesting architectural remains, while Patmos contains the cave in which the Book of Revelation was written. Other places were illustrated, and sketches in the Dardanelles, Constantinople, and Smyrna proved of considerable interest.

*Institution of Civil Engineers of Ireland.*

At a general meeting of the Institution of Civil Engineers of Ireland, held at 35, Dawson Street, Dublin, Mr. George Murray Ross, C.E., presiding, a paper was read by Mr. Edward Waller Storey, C.I.E., on "Brick Arch Roofs," which formed the third of a series of papers by the same author, dealing with the whole subject from the experimental to the practical stage.

*Memorials in Churches.*

Tablets have been placed in Christ Church, Linnet Lane, Liverpool, to the memory of Captain Brocklehurst; and in Mossley Hill Church to the memory of Captain Buckley. One is of brass mounted on a green marble slab panelled into the wall, and the other is also brass, the oblong inscription-plate having trophies above and below. Both are the competent work of the same local craftsman. The Presbyterian minister who wrote a little book about the main Lady-chapel windows has now made a companion volume on the noble women commemorated in the windows under the gallery and on the staircase. These were given by the Girls' Friendly Society, and take in a delightful roll of good and great women from Lady Juliana to Christina Rossetti.

**"ROAD REINFORCEMENT."**

In the latest issue of "Road Reinforcement," a daintily produced and extremely well-illustrated publication, which is issued occasionally in the interests of B.R.C. Fabric by the British Reinforced Concrete Engineering Company, Ltd., 1, Dickinson Street, Manchester, there are useful and well-written articles on "Resilient Concrete" and "National Highways." In the former it is shown that the enormous thicknesses of concrete foundations under various road-surfaces, which have occasionally gone up to 12 in., are rendered unnecessary by reinforcement. The thick mass of plain concrete is a solid and generally a substantial structure destined at its best to give the effect of a solid rock foundation, firm but unresponsive in any way to the traffic, and bridging over small weak spots of ground by arch action. The reinforced concrete, from 3 in. to 8 in. less in thickness than the plain concrete, but stronger in every way, by reason of the tensile strength of the reinforcement, bridges over the soft spots like a girder; it has spring and resilience, so that the road surface instead of being interposed between the wheel load and an absolutely unyielding mass, is more leniently situated between the wheel load and a beam structure which bends slightly and recovers as the traffic goes over it and passes on.

An accompanying photograph in "Road Reinforcement" illustrates an instructive test, under static conditions, of a concrete slab reinforced with wire fabric similar to that used in road foundations and concrete roads, and shows to what extent a slab of this kind may be bent before breaking takes place. The length of the slab is 18 ft., being 12 ft. between the supports and having an overhang of 3 ft.

at each end; the width is 4 ft., and the thickness of concrete only 4 in. It is not suggested that this is a sufficient thickness for main road traffic, although a reinforced foundation 4 in. thick constructed on the main road carrying London bus traffic at Chadwell Heath is acting apparently as well as an adjacent 6 in. foundation similarly reinforced.

In the article on "National Highways," there is an interesting comparison between French and English roads: "French roads are what they are, because even in times of peace the country must be prepared for war. The roads are strategic. The peasant uses them in times of peace, but they were laid out for the soldiers of France."

"We see the same difference between French and English methods of road administration; in France, as we have said, the roads—the *routes nationales*—are the nerves and arteries of the military organisation, and they are consequently maintained at the direct expense of the State. These are the roads which radiate from Paris to the great towns, but now the minor roads of the Departments are under the direct supervision of the Ministry of the Interior. The importance which is attached in France to the roads and bridges of the country is seen in the existence in Paris of a Government school for the training of road and bridge engineers alone."

"In England we had not until 1909, when we established the Road Board, regarded our highways as a national service."

"The science of road-making almost died out in Europe between Roman times and the close of the eighteenth century. The Romans had the art in great perfection. There is nothing which tells us more of the majesty of Rome than their roads, some of which, in massive fragments, are still serviceable. The very pride and power of the Roman character comes out in the circumstance that their roads go on a straight course from point to point, and seem hardly to care about avoiding easily avoidable obstacles. But, after Roman times, European roads fell on bad days, which lasted many centuries. This state of affairs comes out constantly in the literature of the seventeenth and eighteenth centuries. The great road through Wales to Holyhead was in such a condition that in 1685 it was taking five hours to travel the fourteen miles from St. Asaph to Conway, and we read without surprise that in Derbyshire travellers were in constant fear of breaking their necks. Pepys's Diary testifies in more places than one to the possibility there always was of losing the average road entirely, so faintly defined was it from the heath and fens through which it ran, and Arthur Young's Travels show that affairs were not much better in 1770."

"The improvement began in the nineteenth century, and it began in France. It was about a century later—at the beginning of the twentieth century—that the coming of the motor opened a new chapter in road construction and administration, and gave these subjects a new urgency. In a sense, the motor-car has turned the whole country into one parish, and in the establishment of the Road Board we have the first glimmering of recognition: that the roads are a national service over which the State can at least cast its eye."

Among several illustrations of road reinforcement shown in this interesting publication is one of a railway siding foundation, in which the rails are laid on concrete reinforced with B.R.C. Fabric.



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# THE ARCHITECTS' AND BUILDERS' JOURNAL.

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PROFESSOR LETHABY'S happy suggestion that the R.L.B.A. should hold a series of informal conferences on subjects of interest to architects and importance to the public has been wisely adopted, and a programme has been arranged. Five meetings are to be held on alternate Wednesdays, beginning to-day (January 24), when the "opener" will be, appropriately enough, Professor Lethaby, "the only true begetter" of this interesting innovation, who will discourse upon "Architecture and Civilisation." Two afternoons are to be given up to "Education of the Architect," and Mr. Robert Atkinson and Mr. A. E. Richardson, the respective "openers," may be expected to present the subject from refreshingly divergent standpoints. Sir John Burnet starts the conference on "The Control of Street Architecture," and Mr. H. D. Searles-Wood that on "New Materials and Methods as Influencing Design." It is an attractive list with respect rather to the choice of persons than of subjects; for the distinguished openers are to have the support of eminent chairmen—Mr. F. W. Troup, Mr. Reginald Blomfield, Mr. H. V. Lanchester, Sir Aston Webb, and Mr. E. Guy Dawber; but it is rather regrettable that fresher topics were not chosen. Nevertheless, any relief from absolute stagnation will no doubt be warmly welcomed; and stock subjects offer the undoubted advantage of promoting discussion, because it is so much easier to talk upon matters with which one is familiar than upon things which are new and strange. Informality also is a great stimulus to thought and speech, setting a man at his ease, and freeing him from any burden of responsibility beyond that which is purely personal. We trust that these informal conferences may be so successful in every way as to warrant their perpetuation. They seem to suggest an excellent means of increased sociability, and of quickened interest in the Institute.

Two rather curious statements were made in the course of a motion that came before the King's Bench Division last week, as reported in our legal columns, with respect to the perennial Euston Road building-line question. One point illustrated the far-reaching consequences of revolutionary strife; for an express provision of the Act under which the road was laid out was that it should not be paved, lest peradventure the paving materials should be found convenient for the erection of barricades, as the enterprising manner in Paris then was! Now, if the aim was the total removal of all material temptations to barricado, there were an end to the publication of encyclopædias, monumental treatises on architecture, and the like, and the far-sighted legislation of the Act affecting the Euston Road would post sentries round all the quarries, and some of the bakehouses in which the new order upon bread-making is interpreted with as little lightness of and as of heart.

As to the other point, let the Lord Chief Justice speak: "You say that you can have a street made up of four or five general building lines?" Answer: "Yes." Could there be devised by the wit of man any more convincing argument in favour of town-planning? Whether it also supplies an argument with which Sir John Burnet may support his thesis at the forthcoming informal conference at which he is to speak on

"The Control of Street Architecture" remains to be seen. It might serve equally well (coupled with the barricado or anti-paving theory) as a footnote to "Architecture and Civilisation," or even as a proof of the intricacies involved in the "Education of the Architect," who is expected to know all about the law as it affects building lines, but who must be prepared to find those lines tangled into a network from which not even the Lord Chief Justice can extricate him. No doubt the Control of Street Architecture would involve a certain amount of despotism; but it might be expected to correct the rampant individualism that takes advantage of the long length of Euston Road to set up four or five building lines. In this instance they might perhaps be called anti-building lines; for, if ex-parte statements are to be credited, it would seem that they give pause to persons anxious to build but sensitive to snares.

It is with more regret than is usual in such cases that one sees the closure applied to the long controversy that has taken place in the "Observer" on the question of the disposal of the late Sir Hugh Lane's collection of pictures, for it has been the occasion of some very pretty fencing, always with the button on the foil. Mr. D. S. MacColl, who in our judgment comes out an easy victor in the tournament, found no one really worthy of his steel, although Mr. W. B. Yeats was his chief antagonist. Mr. MacColl, as keeper of the Tate Gallery, naturally wants the pictures for London, and relies upon the terms of Sir Hugh's bequest. Mr. Yeats, depending upon an informal codicil, and upon private utterances by Sir Hugh, believes it to have been the testator's intention to confer the boon on Dublin—a point upon which the evidence is in conflict. There is no doubt that Dublin might have had the pictures if the Corporation had not behaved rather ungraciously towards Sir Hugh, who had good ground for the resentment which led to his transferring the offer. If, as seems probable in the upshot, Dublin loses the splendid gift which it once virtually rejected, it will have only itself to blame. "He that will not when he may, oftentimes may not when he will."

A lively controversy on a proposal to build a memorial chapel at Norwich has brought out some alluring suggestions. One correspondent "would erect a building detached from the cathedral, but adjacent thereto, and possibly connected therewith by a covered way. It should be octagon on plan, with recesses on the sides set apart to the different regiments to which the men belonged. The regimental colours would be fixed overhead. . . . It would be the Taj Mahal of Norwich." One would rather he had not mentioned an Eastern model, even for the Eastern Counties. Architects are delicately sensitive artists, and should be carefully shielded from anything in the nature of hypnotic suggestion. It seems that the author felt this; for he hastened to add: "The architecture would not resemble too closely any bygone style, but a design should be obtained with freshness and life, typical and worthy of the times we ourselves live in. It is not necessary for us to admit that we can only copy what has gone before." Very sound and true, providing due weight be given to "not too closely," which is the very pith and marrow of the argument for scholarly design.

## A COUNTRY HOUSE OF THE ENGLISH RENAISSANCE.

MOST buildings of historical importance add to their substantial architectural interest the piquant sauce of speculation as to the approximate time at which modifications or accretions occurred, and as to the authorship of the work. Such a building stimulates interest like an unsolved enigma. An instance is The Vyne, near Basingstoke, which embodies work of four important periods—the early sixteenth, the late sixteenth, the mid-seventeenth, and the mid-eighteenth centuries.

While there is no doubt that the earliest part of the house was built for Sir William Sandys, afterwards William Lord Sandys of The Vyne, who lived in the reigns of Henry VII. and Henry VIII., the extent of the original house (which must have been the successor of an earlier dwelling) cannot be exactly determined, but substantial remains exist in the Tudor chapel and the Oak Gallery. The latter is the familiar long gallery of the sixteenth century, and it is at least open to doubt whether it received its great length, 82 ft., at its inception. If so, it would rank (in the opinion of Mr. J. Alfred Gotch) among the earliest of all English long galleries, its only rival in point of date being that at Hampton Court, the great palace of Cardinal Wolsey, which was presented to Henry VIII., presumably complete, in 1525. It has been generally supposed, with much probability, that the gallery at Hampton Court was the first instance of its kind in England; but Lord Sandys was a friend of Wolsey's, and they may have had building ideas in common.

The date of the Oak Gallery at The Vyne can be only approximately determined. Mr. Gotch, however, has deduced it very shrewdly from observation and comparison of certain significant details. Among the shields and badges on its panelling are

the arms of Wolsey and his cardinal's hat. As he was made cardinal in 1515 and died in 1530, those two years fix the limits within which the work must have been carried out. From the character of some of the detail, which is of the Franco-Italian type, an earlier date than about 1520 is unlikely; and as the arms of Henry VIII., and of Katherine of Aragon, his first queen, also occur, the work must have been completed while they were still on good terms. The probable date would therefore be about 1520-1525.

The plan of the house is of the symmetrical E shape with certain excrescences, among which is the Tudor chapel. It is most unlikely that this symmetrical disposition was adopted so early as 1525, and as there is at least one large chimney-piece of late Elizabethan or Jacobean character, in the Tapestry Room, the probability is that the house was remodelled to the E shape late in the sixteenth century, and that the long gallery was either then formed by lengthening an earlier room, or by incorporating the already existing gallery into the revised plan. The former course would be the more likely; but the whole length of the gallery is clothed with linenfold panelling, and the panels contain arms, monograms, and devices in the style of 1520 and thereabouts, which *prima facie* point to its always having been of its present extent. A close scrutiny of the arms and devices and of the panelling itself might reveal some differences which would support the theory of an extension or, on the other hand, it might confirm the claim of The Vyne to possess one of the earliest examples of this peculiarly late-sixteenth century feature, the long gallery, containing the royal arms supported by amorini, peculiarly Italian in feeling; and yet there is something about its handling which throws doubt



THE VYNE, NEAR BASINGSTOKE: ENTRANCE FRONT.



upon its Italian origin, and seems to point perhaps to an English carver well practised in the new style. The Tudor chapel also has some exceedingly interesting work in the Franco-Italian style of 1520 or thereabouts.

The next important period of building would seem to be the end of the sixteenth century, or the beginning of the seventeenth, when, as already said, the house must have assumed its **E** shape, and when rooms were embellished in the Jacobean manner. But there is nothing on record to indicate who was responsible for this work. The view of the elevation here shown, gives a good idea of the mass of the symmetrical house which came into being at this time; at the further end of the garden front is the Tudor chapel, and in its centre, as well as on the entrance front, is evidence of the next important alterations, those which were carried out in the middle of the seventeenth century. Whether the sash windows which replace the original mullions were introduced at this time is not certain, but the probability is that they were later, judging by the thin sash-bars.

A Classic portico on the garden front, and the doors on the entrance front (both the central doors and those in the side wings), are the most notable remains of the third period of building. This work has been attributed to Inigo Jones, but the evidence, which in this case is luckily to hand, points more certainly to his nephew and assistant John Webb as the designer. It must be remembered that the property had by this time changed hands. From the Sandys it had passed to Chaloner Chute, an eminent Parliamentarian who became Speaker of the House of Commons under Richard Cromwell. It is inherently improbable that he would have employed Inigo Jones, who was an ardent Royalist, and actually resident in Basing House near by when it was taken by the Parliamentary forces. But the

original design of the porch is preserved in the Devonshire collection at the library of the Royal Institute of British Architects, as well as two smaller designs, one for an interior doorway and another for a "tabernacle," both of which were intended for The Vyne. These drawings are clearly not by Inigo Jones, but they may very well be the work of Webb—the portico in particular. Webb, at his best, had quite a dainty imagination, as may be seen in some of the panelling at Thorpe Hall, and in some of his designs in the Devonshire collection.

In the grounds of the house are two curious brick buildings which are said to have been designed by Webb. They are a lodge and a pigeon-house. They do no discredit to whomsoever is responsible for them, being a fairly successful attempt to express in rather clumsy materials (brick and tiles) the idea of a small Classic domed building. The lodge is the severer of the two, none but plain rectangular bricks being employed. In the pigeon-house there are a few moulded members which relieve its severity. The domed roofs are covered with small tiles. How far these buildings would suffer if isolated from the surrounding foliage and creepers is another question.

The last work of historical interest was carried out in the middle of the eighteenth century by John Chute, the friend and correspondent of Horace Walpole. On August 20, 1758, Walpole writes to George Montagu that he had recently been to The Vyne, where he had been "greatly pleased with the alterations; the garden is quite beautified and the house dignified." Exactly what evoked this admiration is not clear, because Chute's *chef d'œuvre*, the great staircase, is mentioned by Walpole some years later as having been recently erected. Walpole was a curious mixture. Even in praising Mr. Chute's staircase, cited as an illustration of the skill of the admirable dilettanti architects of the time, he half condemns it (perhaps



THE VYNE, NEAR BASINGSTOKE: UPPER PART OF STAIRCASE HALL.



unwittingly) by designating it as "theatric," just as, with equal felicity, he calls the bridge at Wilton theatric. In that word is the key to much of the architectural design of the period. How apt the description was may be judged by the illustration of the staircase here given. It presents a splendid *coup d'œil*, but it is a little overpowering for a private house of the size of The Vyne; and surely anything so domestic as chairs or a grandfather clock is out of place on it. Busts and statues perhaps, but nothing homely. These grand conceptions have the defects of their qualities.

It has always been conceded that Mr. Chute, "the great Cû," as Walpole calls him, designed the staircase; and indeed he was a man of cultivated taste and brilliant gifts. But it is certain that he must have had some practical hand to help him in the detail, and only those who have had experience in designing know how all-important the detail is. It is not on record whose was the practical hand, but its owner was clearly a man of skill and feeling. He was not quite so happy in the management of the vestibule ceiling, but the traditions of fine work were still alive.

The Vyne is interesting not only because of its architectural interest, but because it connects itself at many points with notable figures in history and literature. Henry VIII., Katherine of Aragon, and Cardinal Wolsey are commemorated on its panels; Anne Boleyn came there during her brief queenship; so, too, did her daughter Elizabeth many years later; ardent Royalists quitted it to fight for Charles, and finally parted with it to one of the opposite side, that Chalonier Chute whom his contemporaries regarded as one of the ablest men in England.

Horace Walpole spent many days within its precincts in company with his friend John Chute, for whom he had as sincere an admiration as his peculiar temperament admitted. The present owners, still bearing the name of Chute although not lineal descendants, are yet connected by near family ties to their predecessors, and take an undiminished interest in their ancient home. It is certainly a precious heritage, abounding with charm. The entrance front especially is delightful, its mellowed brickwork overgrown with ivy here and creeper there, enlivened by stone quoins, and crowned by a tiled roof of most pleasing quality. To gaze upon its ancient face is to be transported into another age: a place for the dreamer as much as for the architect.

### "SPECIFICATION," 1917.

IN the annual issue of this standard work of reference, which is now nearly ready for delivery, prominence is naturally given to matters of interest arising more or less directly out of the War. Mr. A. G. White, the general secretary of the National Federation of Building Trades Employers, has, with the invaluable assistance of an eminent Belgian contractor, collected a mass of most important data which supply precise and definite information as to the materials that will be required in the reconstruction of the devastated areas. Contractors and merchants are thus for the first time provided with exactly the particulars of which they are most in need. Tables of weights, measures, and money on the decimal system are added. Home industrial reorganisation has been considered in the addition of a strong section on "Factories and Business Premises," in which up-to-date systems of construction—steel-frame, reinforced concrete, and concrete-block—are illustrated; and, in particular, there is a full set of drawings of a large new dye-house—a feature of which it would be difficult to exaggerate the interest and importance, at a moment when the vigorous and economical develop-

ment of this particular industry is of special significance as typifying the determination of British manufacturers to reorganise on up-to-date lines, and, to this end, to provide themselves with buildings embodying the latest modern improvements in design, fittings, and equipment. Among other buildings represented are a paper warehouse, a grain silo, a gramophone factory, and business premises for a co-operative society. Many important new features, such as a fine West-End cinema and an architecturally designed garage, are also illustrated, and additional illustrations to the concrete section strengthen its claim as the most practical guide to reinforced concrete construction.

### THE PLATES.

#### *Monument at Orange.*

THE Franco-Prussian War of 1870-71 is commemorated by monuments in very many French towns, and on the whole these monuments are of good character. Among them the monument at Orange, which we now illustrate, commends itself by a very fine pedestal, on which are set two figures that stir the imagination. Pedestals, unfortunately, are commonly of ill design, being generally of ungainly proportion and faulty outline, with coarse mouldings and poor ornaments. The more interest therefore attaches to this French example, which is spirited, pleasing in form, well balanced in its parts, and in good relation to the sculpture that surmounts it.

#### *First Drawing-room, Lansdowne House.*

Lansdowne House, in point of its architectural enrichments especially, is among the very best of the works of Robert Adam, and of its many fine rooms no single apartment is more striking than the first drawing-room, shown on our plate. Delicate pilasters of the Corinthian order, painted in the Pompeian manner, divide the wall surface into panels, and carry a rich frieze and cornice modelled in low relief. The ceiling is exceedingly rich; paintings are inserted in it and play a large part in the design, which is tricked out with mythological and other classical figures. An admirable effect is gained by the introduction of the large arched recess in the side wall. A fine mirror is set in this, and the lunette is treated with effective fan-like decoration.

#### *Chimney on Lodge, Kew Gardens.*

To go back to the time of Eden Nesfield—the second half of the nineteenth century, when the so-called "Queen Anne" style was being developed—is a curious exercise to-day. But it is not without profit, more especially for certain matters of craftsmanship that were then so much in the minds of architects. One might opine that Nesfield and Philip Webb should have the first places. Both were imbued with the idea of craft-architecture, and both produced work of extraordinary interest. The two lodges in Kew Gardens are among the smaller essays of Nesfield, but merit nevertheless more than passing notice, especially the one with the tall central chimney stack which we show. The clustering of flues into one such stack is a happy and effective device, and when the brickwork is cleverly handled, as in this case, the result is worth the trouble given to it. The cap is especially well managed.

#### *A London Shoe Shop.*

Much is possible in the way of architectural decoration in shops, as this example serves to show. Here is a complete scheme of decorative woodwork. William and Mary character, and very spacious and pleasing the shop is. One has only to recall the ordinary shop decoration to appreciate the difference between the two.





MONUMENTS. XXVI.—MONUMENT TO COMBATANTS IN WAR OF 1870-71, AT ORANGE, FRANCE.  
BY G. MICHEL.







ENGLISH INTERIORS. VII.—FIRST DRAWING-ROOM, LANSDOWNE HOUSE, LONDON.

ROBERT ADAM, ARCHITECT.







DETAILS OF CRAFTSMANSHIP (SERIES II.). XX.—CHIMNEY ON LODGE, KEW GARDENS,  
EDEN NESFIELD, ARCHITECT.







CURRENT ARCHITECTURE (SERIES IV.). XIII.—PREMISES OF LONDON SHOE COMPANY, Nos. 116 AND 117, NEW BOND STREET, LONDON.  
INTERIOR DECORATION BY ANDREW RUSSELL.





## AN APPRECIATION OF THE LATE HERBERT BATSFORD.

It is with deep regret that we have to record the death of Mr. Herbert Batsford, who died on Sunday, January 14, at the comparatively early age of fifty-six. Batsford and Architecture have been synonymous terms since the business was started five years after the accession of Queen Victoria. Bradley Thomas Batsford, the original founder of the firm, entered the architectural lists at a time when the majority of books dealing with the fine arts bore the names of Taylor, Weale, Ackermann, and Loudon. In a way the new firm began as a competitor, but it was destined to absorb the eighteenth-century traditions of its established rivals, and eventually to become the world's clearing-house for all books relating to architectural matters. Herbert Batsford, the third and youngest son of Bradley Thomas Batsford, was a young man of twenty-one when the death of an elder brother necessitated his entry into the business. At

account he disdained the usual methods of worldly-minded publishers, and sought to produce books that would be indispensable to architects and artists. He stamped the books produced under his guidance with intrinsic human import, forcing upon the minds of his audience the vital convincing issues underlying architecture, which he realised to be, in its ideal aspect, the concrete literature of the race. Not that Herbert Batsford wrote the books; far from it—his was a retiring and sensitive nature; but he had the especial and rare gift of moulding authors to his own views of what was required by the practising architect, and it was rarely that his advice was ignored. No ordinary publisher could have achieved the mastery of the esoteric subject of architecture in the same way as Herbert Batsford. He seldom had recourse to catalogues, but could quote off-hand the name of any rare book or print in English and foreign collections. In



that time he had no special inclination to be a publisher, for his ambitions were centred upon the legal profession, and for some years he had been studying to become a barrister. Herbert Batsford was a man of extraordinary energy and organising power. It was not long, therefore, before he mastered the intricate mechanism and routine of a publisher's office, until the time came when the sole control was given into his hands.

The house of Batsford was ever ready to keep touch with modern thought in architecture, giving a ready ear to the distinguished authors who flocked to Holborn, and for thirty-five years the architectural profession has had just cause to be grateful to the firm for issuing a constant stream of magnificent works relating to architecture and building science.

Herbert Batsford soon realised that an authoritative book was the *vade mecum* of an architect, the one true means to inspire confidence in practice. On this

addition, his keen insight and artistic perception gained for him a reputation as a connoisseur of prints and engravings, which in turn is reflected in the superb illustrations that enrich the books on varied subjects bearing the name of the firm.

During the past ten years the publishing activity of the house has been enormously increased and developed in original directions, for Herbert Batsford was determined to extend his untiring efforts to promote taste. He was now at the zenith of his power, and had a wide circle of friends. He made it a rule to accompany his authors on their travels, and to investigate at first-hand the work of the masters of the periods they were describing. It was owing to his activity and enthusiasm that the existence of an earlier state of Piranesi's "Carceri" in the British Museum was made known, and during his travels in England and on the Continent he volleyed back by every post photographs and drawings of buildings which he had rescued

from obscurity. Batsford loved nothing better than a long motor journey through the villages and towns of England. He would start from Holborn early in the morning with an architect friend and notice every feature of interest on either side of the road. First it would be the proportions of a Georgian house, next the modelling of a vase, the silhouette of a cupola, the lines of a barn, or the characteristics of a Greek town-hall. His zeal in studying churches was indefatigable, and he did not allow his attention to be directed solely to first- second- or third- pointed, but insisted on examining all monuments, mural tablets, and grave-stones that bore evidence of superior craftsmanship. Sometimes the county of Kent would attract him, at others Essex; he would extend his travels from Norfolk to Cornwall without the least warning, and frequently astonished architect friends in Edinburgh, Dublin, and Bristol by calling upon them without notice. It needed enthusiasm and energy to be up to the standard required by this energetic man, who made it part of his life to see things at first-hand before giving an opinion. There was one occasion when a discussion arose between Herbert Batsford and a young author on the chinoiserie of the late eighteenth century. "Do you know any examples that still exist?" said Batsford. The reply was a reluctant "No." "Well, we had better find some!" Next morning publisher, author, and an architect friend met at St. Pancras to breakfast on one of the northern expresses. They reached Bedford at nine o'clock, hired a motor, and lost themselves in the Fen Country, but Batsford had smelt out some magnificent specimens of bridges and treillage in private grounds before the day was over, besides many other things which he said would do for the books being written for him. How he managed to keep a dozen books going at a time, prior to their publication, was always a mystery, but not a single block nor a line of text could be passed for press until he had pronounced judgment, and his taste was unfailing.

With Herbert Batsford books were an obsession, but they had to be books of a large design, irrespective of size; he had no patience with namby-pamby methods or narrow policies. His authors had to submit a prospectus of what they intended to prepare before he would glance at their manuscripts, but in the end they were forced to acknowledge that his methods were the right ones. His ideal of attainment, together with his enthusiasm for perfection in all things, was a source of inspiration to his wide circle of admirers. None who were brought into contact with him ever regretted it. He was active in issuing art publications, even after the outbreak of the war, and in the summer of last year produced with Mr. Walter Godfrey a monograph of "English Mural Monuments," and only a month since was supervising a record of "Port Sunlight." Three years ago he made a departure from his usual routine and published the series of Fellowship Books in eighteen volumes, edited by Mrs. Arthur Stratton, thus giving proof of his broad sympathies for literature.

It is impossible to view the library at the Royal Institute of British Architects, the collection at South Kensington, or those of the Avery Library in New York without involuntarily thinking of Herbert Batsford, whose enterprise and foresight have done so much to benefit architecture, and incidentally to improve the general standard of book production in this country. British printers are, like most other British craftsmen, the finest in the world—when properly officered. Mr. Batsford was in this respect a martinet, and he got out of his men the best that was in them. A "Batsford book" leaves no room for improvement in paper, typography, illustration, or binding; and his nice taste in title-pages is almost proverbial.

## CORRESPONDENCE.

*The Architectural Association Bureau.*  
**To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.**

SIRS,—Your readers are already familiar with the work which the A.A. War Service Bureau has carried on since the outbreak of war in connection with recruiting, and by assisting members of the architectural profession in Army matters, and they will therefore be interested to know that the Association has now turned its attention to the needs of members of the profession returning from the Army to civil life, and has prepared various schemes for meeting such needs.

Brief details of the Association's proposals were published in the "A.A. Journal" for December, but we are particularly anxious to call attention to the fact that the assistance of the War Service Bureau is placed unreservedly at the disposal of any member of the profession discharged from the Army.

Inquiries in connection with convalescence, employment, re-training, emigration, or, indeed, any matter connected with the return to civil life, will be welcomed and every assistance given.

F. R. YERBURY.

Secretary, Architectural Association, 37, Great Smith Street, Westminster, S.W.

*Income-tax Assessments.*  
**To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.**

SIRS,—The income-tax demand notes are now being issued, and it behoves your readers to look very carefully into the figure at which they are charged. The rates are as follows:—

Earned income: Up to £500, 2s. 3d.; up to £1,000, 2s. 6d.; up to £1,500, 3s.; up to £2,000, 3s. 8d.; up to £2,500, 4s. 4d.; over £2,500, 5s.

Unearned income: Up to £500, 2s. 3d.; up to £1,000, 3s. 6d.; up to £1,500, 4s.; up to £2,000, 4s. 6d.; over £2,000, 5s.

In all cases it is the total income that is the criterion in fixing the rate of tax.

Relief is also allowed on all incomes up to £700 for the payment of life insurance premiums, for children under sixteen, and for reduction to correct rate of tax where the unearned income has suffered deduction of tax at 5s. in the £.

WILFRED T. FRY,  
 For the Income-tax Reclamation Association, Ltd.

*The Original Brick and Tile-making Machine.*  
**To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.**

SIRS,—Turning over the pages of "The Literary World" for September 7, 1839, I came upon this paragraph: "An apparatus invented by the Marquis of Tweddale [*sic*], was exhibited [at a meeting of the British Association], in which the clay is carried under the rollers in a compressed state as an endless web, and being cut into shapes, has but to be carried away to be baked. One revolution of the machine in a minute, produces thirty bricks; and one man and two boys are thus able to produce 30,000 bricks in a working day. These bricks are also left [*sic*] "less" is obviously intended] porous, one absorbing, in six hours, only 4 oz. of water, whilst one of the best bricks absorbs 28 oz." This must surely be the first machine of its kind, and the forerunner of many inventions for the clayworker. I may mention that this "Literary World" of nearly eight years ago was edited by the industrious Mr. John Timbs, whose collectanea—notably the "Curiosities of London"—include innumerable references to buildings.

J. F. R.



## BRISTOL REVISITED.

BRISTOL in these days is claiming a good share of public attention. Hither comes the Chancellor of the Exchequer to deliver an important speech on the "Victory War Loan," and the compliment to the seaport of the West is well deserved; for Bristol is playing an important part in the great national war effort. To see something of her exertions is to realise (what is now generally typical of every town in the United Kingdom) how completely the war interest dominates all others.

Bristol, by her geographical position, by the possession of extensive docks, by her organic relationship to Avonmouth docks (which have done much to regain for her the commerce lost to her northern rival, Liverpool), seems to be singled out to do great things in the national cause. And she is giving generously of her best.

To climb to the top of the Cabot Tower and take a comprehensive look around is to see the whole machine at work. That is the advantage of Bristol from a spectacular point of view. Lying almost hidden in the valley of the Avon, the city is ringed in with high hills which seem to set a definite limit to its extent. You may see from the Cabot Tower where the city ends and the country begins. You look out across an intricate tangle of red-tiled and blue-slatted roofs, of spires and towers, of smoking chimneys, and tall factory shafts. And over it all hangs a grey-blue mist, through which trees and green fields are discernible on the tops of the hills in the far distance.

On the balcony of the upper stage of the Cabot Tower some thoughtful person has caused to be placed a series of bronze tablets, which record the distances of many great cities. It is pleasant to survey the encircling hills and to think that beyond them somewhere you may find Madrid (770 miles), Paris (285), Rome (970), Athens (1,580), Constantinople (1,640), Vienna (870), Berlin (690), Petrograd (1,390), and so forth. There is something comforting, too, about the prodigious distances of enemy capitals.

But the city below is a more captivating study, and it is a real pleasure to descend and once again explore the old familiar streets. Outwardly there is not much apparent change in Bristol, apart from the tangible evidence of the war. Soldiers there are, of course, in hundreds, and the dark blue uniform of the wounded is conspicuous. (In passing, it may be mentioned that Bristol has established a number of great War Hospitals; and the voluntary organisation known as the "Inquiry Bureau," which has taken up the task of providing outings and entertainment for the wounded, is one of the finest in the kingdom.)

But in these times of stress and strain it is refreshing to turn for a moment from the war—from all that is unstable and temporary to the things that are steadfast and permanent. Indeed, it is largely the sure knowledge of the past that enables us to face the future with undiminished confidence. There is something comforting, for instance, in the calm, serene dignity of Park Street and its immediate neighbourhood. Those plain stone eighteenth-century façades, which run step by step up the hill towards Clifton, seem to embody the unwavering spirit of national resolution. Park Street has long lost its residential character; but the mostly modern shop-fronts do no very violent harm to the amenities. In Berkeley Square, near by, we find eighteenth-century charm in all its original sweetness and dignity—a fine enclosure of houses with rusticated ground storeys and pedimented doorways, all mellowed and beautified by time. Critics find fault with eighteenth-century work because of what they are pleased to call its "mono-

tony" and "dull decorum"; but the more we see of the architecture of this period the more conscious do we become of its dignity. Park Street, in spite of its faults and disadvantages, is easily the most impressive thoroughfare in Bristol.

Turning for a moment from the old to the new, of which we receive a reminder at the top of Park Street, where some little progress is still being made with the Bristol University extension, it may be said that very little building work, except that of national importance, is now in progress. Indeed, in the course of a long day's ramble, it is difficult to find anything of considerable size in course of erection.

When the University extension is completed Bristol will possess a peculiar trinity of buildings in close juxtaposition. First, there is the Museum, with an odd Moorish appearance about it; then the Art Gallery, strong and heavy in a mantle of "Free Renaissance"; and then, last of all, the University buildings, an essay in modern Gothic. The mixture is certainly original and daring.

To revisit Bristol is to confirm the impression that the finest part of the city is really Clifton. That piece of planning which has the Victoria Rooms as a background and includes the King Edward Memorial, with its attractive scheme of basins, is worthy of any of the great cities of the world. But we British are a peculiar people. We build a fine imposing Corinthian temple and, with delightful inadequacy, call it "Victoria Rooms"!

A long time ago, when the world was at peace and we could spend a great deal of time in discussing the "Grand Manner" and the "Neo-Grec," the *Journal* published a very interesting article on "The Provincial Character of London Street Architecture." We have only to look around Bristol to realise the truth of that article. Some parts of Bristol, indeed, might have been transplanted direct from London. The area between Colston Avenue and St. James Barton is almost exactly Clerkenwell over again. Baldwin Street and Victoria Street are strikingly similar to Queen Victoria Street, E.C. Clare Street is simply Broad Street or Fenchurch Street repeated; while, Wine Street might easily be a section of Bond Street, W. Everywhere we see the same old jumble of discordant ideas, everywhere the same trivialities, the same lack of a governing and guiding control. We ought not, perhaps, to grumble if London is only a larger and uglier version of Bristol; for this contempt of order in architecture seems to be a national instinct within us. But is it? Our architectural inheritance of the seventeenth and eighteenth centuries would seem to disprove the idea. Why, here in Corn Street we have the fine old Exchange, built by the Woods, of Bath, rising up to confound the notion. Its dignified front puts to shame the host of pretentious modern buildings which surround it. And the Classic Revival Council House on the opposite side of the street also takes up the protest, but in a more sombre manner. We have a great tradition to work upon when we settle down to the new life after the war.

Bristol cannot, perhaps, be called a fine city. It is certainly not fine in the sense in which so many of the provincial towns of France are fine. It lacks co-ordination, and is in parts unutterably dull; but it has many redeeming features. A city which possesses such an amazingly beautiful Gothic fabric as St. Mary Redcliffe, or so charming an open space as College Green, with its setting of mellow Georgian brickwork and the stately pile of the cathedral rising in the background, has more than enough to claim our respect.

G. J. HOWLING.



## LEGAL.

**An Architect and His Parochial Rights.**  
*Rex v. The Hampstead Borough Council,*  
*ex parte Woodward.*

January 15. King's Bench Division. Before the Lord Chief Justice and Justices Ridley and Lush.

This matter came before the Court on a rule *nisi* for mandamus to disclose documents.

Mr. Macmorran, K.C., and Mr. S. Turner appeared for the Borough Council, and Mr. Clavell Salter, K.C., M.P., and Mr. Brook Little for Mr. Wm. Woodward, of 13, Southampton Street, Strand, senior member of Messrs. Wm. Woodward and Sons, architects and surveyors.

Mr. Macmorran said he appeared to show cause against the rule. The rule was to show cause why a writ of mandamus should not issue directed to the Council commanding them to give Alderman W. Woodward access to inspection of the whole report made by the medical officer of health in respect of 83, Palmerston Road, dated June, 1915, and a copy of the observations of the Public Health Committee to the Local Government Board in response to the Board's letter of September 6 last, and to allow him to take copies of the same, on the ground that the same related to matters of public importance in the administration of the business of the Council of the borough, and that Alderman Woodward, as a member of that Council, ought to have access to the same for the purpose of forming an opinion thereon and discussing the acts of the Council and its committees with regard to the matters dealt with in such documents. Counsel said he was not going to deny that a member of the Council was entitled to inspect such documents in the ordinary course of business. The question here, however, was whether the Court, in the exercise of its discretion, would grant a mandamus to compel such inspection if it appeared that the inspection was really wanted in the interests of persons who were in litigation with the Council—pending litigation with regard to the subject-matter of the documents in respect of which inspection was sought.

Mr. Justice Lush: You say this is an attempt to make inspection of privileged communications?

Mr. Macmorran: Yes, and the suggestion is that the application is made in the interests of the owner of the house.

Counsel then read an affidavit made by Mr. Wm. Woodward, of 13, Southampton Street, Strand, senior member of Messrs. Wm. Woodward and Sons, architects and surveyors. Mr. Woodward said he resided in the borough and was an alderman of the borough and an ex-mayor. In everything he did in the matter he was actuated solely by public spirit, and in the public interest he took the matter up, coming to the conclusion, after a visit to the premises, that they were in no sense of the word "unfit for habitation," and that the closing order was oppressive and mistaken.

The Town Clerk, Mr. A. P. Johnson, in his affidavit in reply, submitted that Mr. William Woodward was not entitled as of right and in virtue of the fact that he was an alderman of the said borough and a member of the Council to inspect the said report and/or the said observations. He was further advised and submitted that even if he had any such right the circumstances were such as to make the present case one in which the Court would not enforce such right by mandamus.

Mr. Clavell Salter submitted that here Mr. Woodward was right, and that he had the right which had been put forward to see both the documents. His client acted in a purely public spirit throughout the matter, and took a view which he and others thought was a right view of the matter. Under these circumstances there was nothing to justify the Court refusing to enforce that right.

The Lord Chief Justice, in giving judgment, said the question involved was only a question of fact, as there was no difference of opinion with regard to the principle of law to be applied. He did not wish it to be thought that he had come to the conclusion that Mr. Woodward had in any way wilfully misled the Court. He was not suggesting it, and he did not think it. He thought that Mr. Woodward, almost unknown to himself, had desired to help Mr. Arlidge, and with that motive had sought to get the information from the two documents. Under these circumstances, notwithstanding that he had a common law right to the production of the documents, he was of opinion that the Court ought to refuse to exercise its discretion in favour of Mr. Woodward. The rule would be discharged.

Justices Ridley and Lush agreed. Rule discharged, with costs.

**The Euston Road Building Line.**

*Rex v. the Tribunal of Appeal Under the London Building Act, ex parte the London County Council.*

January 15-16. King's Bench Division. Before the Lord Chief Justice and Justices Ridley and Lush.

This matter came before the Court on a *nisi* for order to state a case, a rule having been obtained by the London County Council directed to the Tribunal to show cause why they should not state a case for the opinion of the Court.

Mr. Macmorran, K.C., and Mr. A. A. Bethune, on behalf of the Metropolitan Railway, appeared to show cause against the rule, the railway company having obtained a decision of the Tribunal as to the building line in the portion of Euston Road in which they were interested. Mr. W. Craig Henderson appeared in support of the rule.

Mr. Macmorran submitted that the case was not one of much difficulty. The Euston Road had been the subject of many legal discussions during the last few years. The portion of the road in question was the north side and ran from the Edgware Road to Osnauburgh Street. At the time the road was made it was a new road and ran from the Edgware Road down the present Euston Road and thence up Pentonville Hill to the Angel at Islington. One of the provisions of the Act under which the road was laid out was, among other things, that it should not be paved. That was due to the fears of paved roads being made into barricades, as in the case of Paris. Certain Acts were passed dealing with the question of the buildings to be erected and the distance they were to be from the roadway or pavement. The enactments of the Act of 25 and 26 Victoria were re-enacted by the London Building Act and power was given to the superintending architect of the L.C.C. to define the general building line. In this case his clients had been before that Tribunal, and they had fixed a line. The railway company now appeared to show cause against the rule obtained by the Council being made absolute. Counsel's contention was that there was no question of law raised here, but that it was entirely a question of fact,

and upon that ground the Tribunal refused to state a case. The facts were that certain owners were desirous of building in the Euston Road between Diana Place and Fitzroy Place. The superintending architect of the L.C.C. fixed the building line for that portion of the road. The matter went before the Tribunal, and they came to the conclusion that there were different lines of frontage in different parts of this long length of road. The said in effect that there was no building line for that portion in which his clients' station stood.

The Lord Chief Justice: You say you can have a street made up of four or five general building lines.

Mr. Macmorran: Yes.

Mr. Henderson having advanced arguments in support of his views.

The Court expressed the opinion that a case must be stated for the opinion of the Court on the first two grounds upon which the rule was stated, viz.:

(1) Whether in these proceedings the Tribunal were entitled to define the general line of buildings between the points A and C on the plan, and

(2) Whether the Tribunal were right in determining that there was no general line of buildings between the points A and C.

The Lord Chief Justice said the Court now only decided that it was not made clear to it that no point of law arose. The order *nisi* was made on three grounds, and they made the order absolute, but they did not decide that the third point, viz., whether the Tribunal were entitled to determine in what street or streets the buildings to the west of the point B were situate or to determine that such buildings were not in the Euston Road at all, arose between the railway company and the other parties, and the third ground did not affect that.

**INFORMAL CONFERENCES AT THE R.I.B.A.**

The Council of the Royal Institute of British Architects have favourably considered the suggestion made by Professor Lethaby at the opening meeting of the session and have arranged for a series of informal conferences to be held at the Institute on subjects of interest to architects and of importance to the public. The conferences will be held on Wednesdays at 3.30 p.m., at fortnightly intervals beginning Wednesday, January 24. The following is a list of subjects and dates as far as at present arranged, together with the names of the openers of discussion and chairmen of meetings:

January 24.—"Architecture and Civilisation." Opener, Professor W. F. Lethaby (F.); Chairman, Mr. F. W. Troup (F.).

February 7.—"Education of the Architect." Opener, Mr. Robert Atkinson (F.); Chairman, Mr. Reginald Blomfield R.A. (F.).

February 21.—"Education of the Architect" (continued). Opener, Mr. A. F. Richardson (F.); Chairman, Mr. H. V. Lanchester (F.).

March 7.—"The Control of Street Architecture." Opener, Sir John Burne R.S.A., LL.D. (F.); Chairman, Sir Aston Webb, K.C.V.O., C.B., R.A. (F.).

March 21.—"New Materials and Methods of Influencing Design." Opener, Mr. H. D. Searles-Wood (F.); Chairman, Mr. E. Guy Dawber (F.).

Many well-known architects have consented to take part in the conferences.





## WAR BUILDINGS SECTION

### FOREWORD.

WITH this first issue of a new feature in our Journal it is appropriate to give a preface indicating the aims we have in publishing a War Buildings Section.

Our readers being only too well aware of existing conditions in the architectural profession, it is unnecessary for us to refer to them at any length here. Everyone knows that the ordinary course of architectural practice has been almost stopped by the changed conditions of this present time of War, and more especially by the restrictions on building which the Minister of Munitions has found it necessary to impose, in order that the available supply of materials—steel-work especially—shall be taken for munitions or War construction work, and that labour which is imperatively needed for national purposes shall not be diverted to private enterprises.

At the same time, it is very necessary to point out that an immense amount of War building work is being carried out, involving new problems in design and construction, and including schemes on an immense scale, never dreamt of before in this country. Foremost among these gigantic new activities are the shell factories and other munition buildings which have been and are still being erected in various parts of the country, but in addition to these we have to take count of the constructional activities of the Air Service, and other important developments which make Britain at War so formidable a factor in the present conflict.

That this great work should pass unrecorded is a public loss, but the necessity of imposing a ban on the publication of all matter that might be of service to the enemy at once precludes the giving of illustrations and particulars which in ordinary times of peace would be available for publication. Nevertheless, under certain specified conditions, it is possible to render a double service—first to those of our designers (architects and engineers) who are actually engaged on War buildings of one kind and another, and, secondly, to the general body of the profession, who have a direct constructional interest in this work. We have taken steps therefore with this end in view,

and have been fortunate in securing the interest of Government Departments concerned and the consent of the Press Bureau for the reproduction of illustrations and matter: an instalment of which is given in this issue.

But apart from the design and construction of buildings directly intended for War work, we have another, and a broader, aim in presenting this Section. It is to show the fresh developments that are foreshadowed by the new conditions created by the War. Factory construction and lay-out, on lines far more efficient and more human, are in the forefront of this programme, which includes also the adoption of the newest methods in the design, erection, and equipment of all industrial buildings.

Being yet in the midst of War, it is impossible to forecast with any degree of preciseness the changed state of affairs that the future will surely witness, but it is already clear that the old conditions under which our industries were conducted will be very drastically altered. There will be a new spirit in the conception and design of factories and kindred buildings, not only as regards such material questions as efficient planning on ample lines and economical construction, but also, and more important, as regards what is known as "welfare work": that is to say, there will be rooms for rest, for recreation, for meals, as well as work-rooms; and lighting, ventilating, and heating will receive as much attention as mechanical equipment. In the matter of lighting especially there will be a vast improvement on the old industrial buildings. The ideal is unquestionably "the daylight factory," where every floor is flooded with light. Ventilation, similarly, will embrace installations that will eliminate all stuffy rooms, and the heating system will ensure comfortable conditions for the workers.

It will be our endeavour to deal with all the aspects of this newer spirit in construction and equipment, as well as to show what is being done in the way of buildings devoted purely to War purposes, and in this way we hope to give to this War Buildings Section a value that will assure for it the wide support of the architectural profession and the building industry.



## A SHELL FACTORY.

ONLY if it were possible to show one complete view of it, could one gain a really comprehensive impression of the amazing work in the making of munitions that is at present going on in this country, night and day ceaselessly. Such a com-

plete view is obviously impossible, but the data which the Ministry have issued from time to time, especially the figures recently made public, give a fair indication of the wonderful increase in production that has taken place, and is still progressive. If

men constitute the body of an army, munitions are the life-blood, and we all have a vital interest in munitions. For the account of the total accomplishment in their production we must wait until the War is over and there is no longer any occasion to observe the present very necessary restrictions. But, meanwhile, we may be permitted to give individual illustrations, and in this way we now present an account and some views of a shell factory in active operation.

The lay-out of the buildings is shown by the accompanying block plan, which, however, does not include the whole site, this comprising in all an area of nearly six acres, providing space for future extension.

The main buildings are constructed with brick walls on concrete foundations. The roofs, which are carried on heavy steel columns and girders, are made up of 5 by 2 timbers, laid on edge, close together, and covered with heavy tarred paper, tar and gravel. In consideration of future extension, the buildings are designed to carry additional storeys. Iron covered fire-doors are provided between departments. Large windows with steel sash fitted with tilting or ventilating section provide the maximum amount of light and ventilation—a recognised necessity in modern industry. The factory, indeed, as will be seen from the two illustrations on the opposite page, is extremely well lighted. Floors are of concrete, 6 in. thick, laid with wood blocks.

The factory is served with two railway sidings, one at each end of the buildings, the doors of the latter being on the same level as the floor of the railway trucks, facilitating expeditious loading and unloading. Mechanical conveyors carry the packed cases from the dispatch room across the platforms into the wagons.

Heating is provided by steam radiators, supplied from the boiler plant, which also supplies hot water required for the various processes. Considerable attention has been given to the provision of suitable lavatories, wash basins, and racks for clothing, etc.—all indicative of the thought for the comfort of workers which is so essentially a modern development.

Minimum handling of material and economy of operation are in constant evidence. These are a reflection of the well-arranged grouping of the buildings, the proper allocation of the various departments, and the skilful placing of machinery and equipment.

The function of the plant is to turn out brass cases for 13-pounder horse artillery ammunition, 18-pounder quick-firing field gun for shrapnel or high explosive, and howitzer ammunition. With from four to five hundred hands employed the output of this plant is 600,000 cases per month.

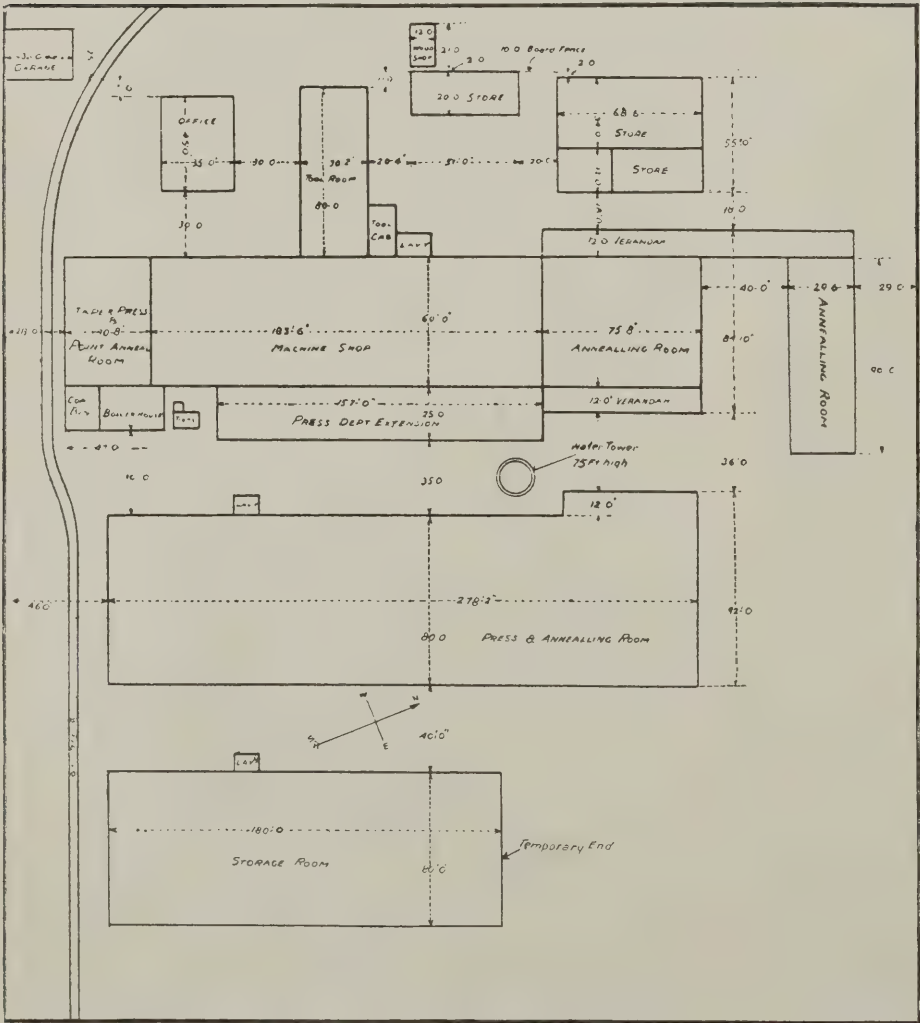
As it is necessary to all designers of industrial buildings to have a good knowledge of the processes that are carried out therein, and as the subject of munition making is of very great topical interest, we give the following description of the work carried out in this factory.

The actual manufacturing of the brass case consists for the most part in a series of stampings or drawings of the metal from its original shape, that of a circular disc, to the extended cylinder of brass having the required dimensions and accuracy of measurement within the limit of four one-thousandths of an inch.

The first operation towards the completion of the case is that of cupping, which consists in stamping the metal disc. From

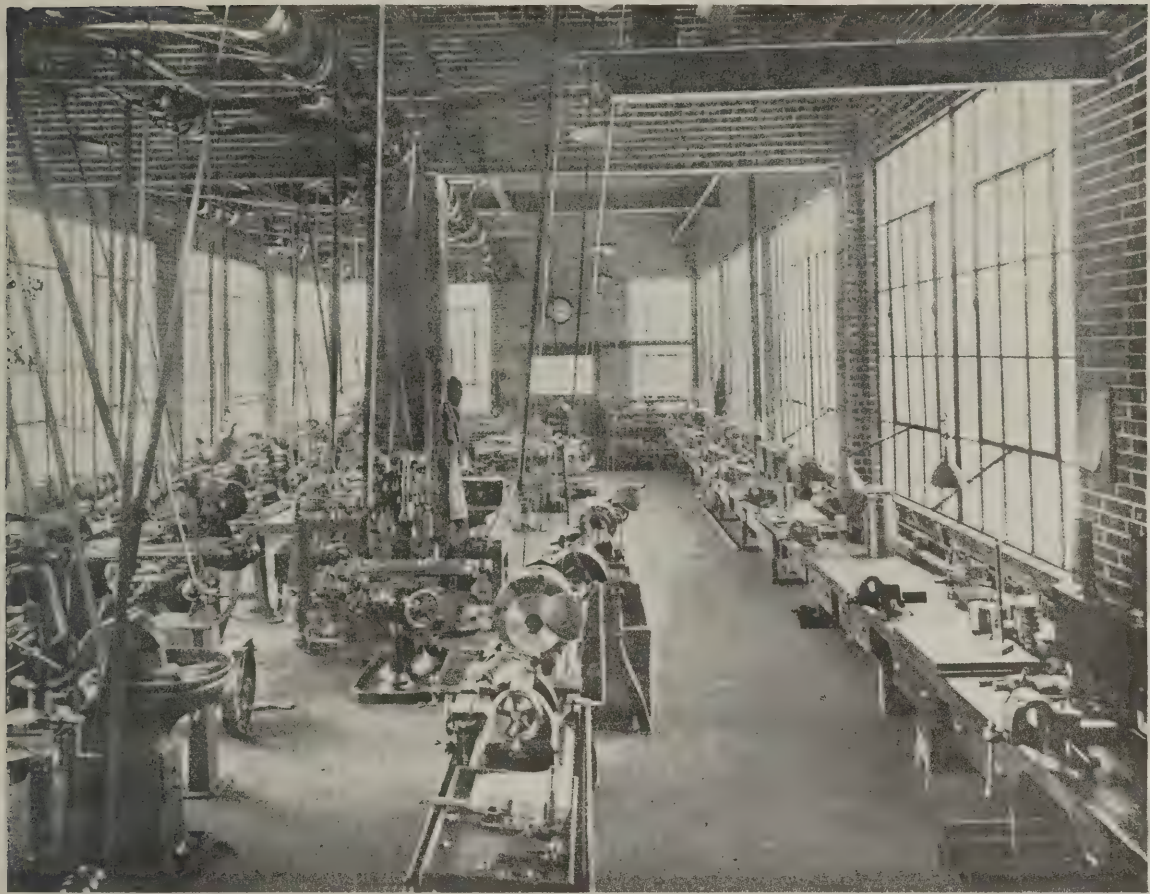


COOLING CASES AFTER ANNEALING.

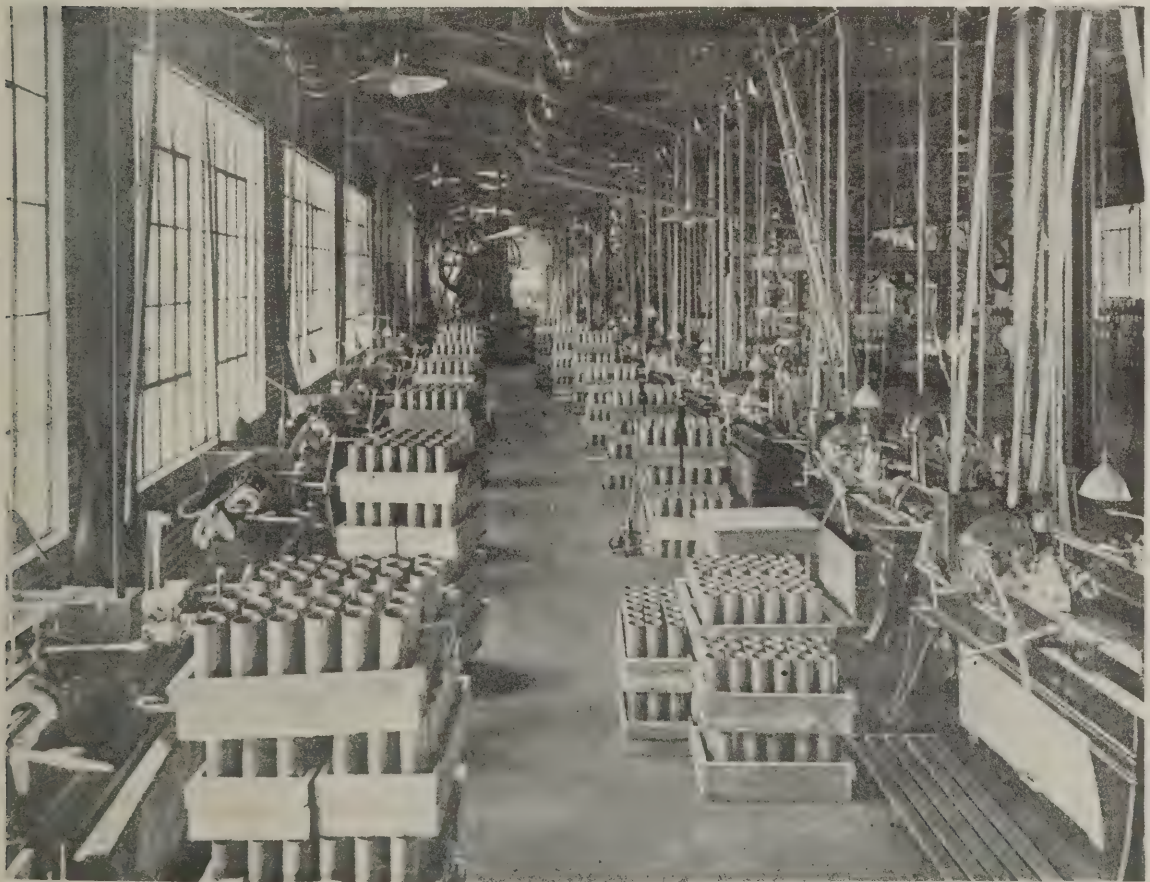


BLOCK PLAN OF FACTORY.





Tool Room.



Lathe Department.

A SHELL FACTORY.



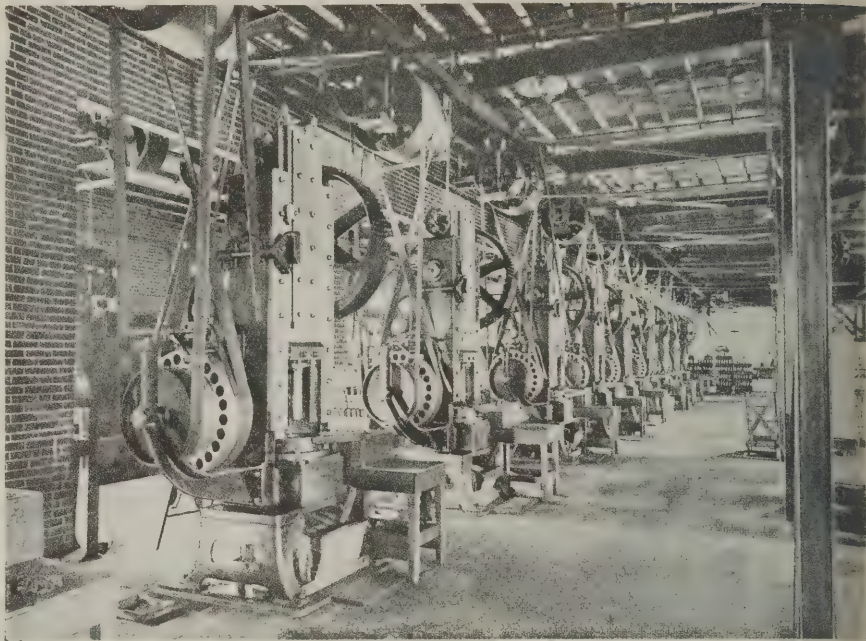
the cupping press the discs are taken to the annealing room adjoining, where they are carefully annealed by passing through a furnace kept at a constant temperature of about 1,200 degs., the time occupied in this process being from forty to sixty minutes.

After each annealing, tests are made from selected samples to determine the hardness of the metal. This is accomplished by means of a scleroscope and microscope, and affords a thorough check as to whether the proper temperature in the annealing furnace is being maintained.

From the annealing furnaces the cups are taken to the open air to be cooled (as shown by the illustration on page 48), after which they are washed in a weak solution of sulphuric acid and rinsed in clear water. This washing removes all deposit from the metal, and reduces to a minimum the possibility of scratching the surface in the press.

The second operation is known as drawing. The same style of press is employed as for cupping. In this press the length of the sides is increased by about an inch, the bottom being oval as before. Inasmuch as the process hardens the brass, it is necessary that it be annealed and washed after each drawing. The embryo cases therefore are again taken to the annealing room, where they go through the same process as before. In the second draw a similar press is employed as before. The operation consists in again slightly lengthening the sides, after which the first indent is made in the base. This indent later becomes a priming hole in the case. When again annealed and washed the cases are brought to another press with a longer punch, in which they are lengthened about 4 in. The fourth draw consists in lengthening the case considerably, when the second indent is made, and the shape of the base changed. A different type of press, of a rack and pinion pattern, is employed in the fifth draw, which consists of drawing out the sides still further, after which the case is trimmed to a specified length.

Since the physical qualities of brass differ very materially from those of steel, the punches and dies are designed with a view to drawing the case to the size required with a degree of accuracy within the limits of four one-thousandths of an inch. It would be impossible, as in the case of steel shells, to accomplish this on



RACK AND PINION PRESSES: FINAL DRAWING.

a lathe. The sixth and final draw is on a press similar to that used in the last operation; it is then again trimmed to a specified length. In the presses in all operations a compound of soap and oil is used somewhat thicker in consistency than is used for lathe work.

At this point the cases are washed in a solution of soda water to remove all grease, and are then rinsed in clear water. They are now ready to be headed. Heading is performed on a 1,000-ton toggle joint press, two blows of the header being necessary. The die on the header flattens the base and makes the flange of the proper size and shape. The indent hole is also increased at this operation.

Following the heading the cases are taken to a point annealing oven, where they are annealed by gas about half way down their length from the mouth. The annealing is necessary because the shape of the case is changed in the next operation. Up to this time the sides are perfectly straight. They are now tapered in a press to fit the shape and taper of the gun in which they are to be used.

Machining follows. Special turret lathes are required to finish the heads, and to recess and thread the priming hole, as well as trimming the case to the proper length. From the lathes the cases are taken to the primer rectifying machine, where all holes are tapped or cleared to the proper gauge. This constitutes the final mechanical operation on the case.

Testing is carried out by inspectors, who examine the cases from time to time during the process of manufacture. The Government inspectors perform the final examination, and accept or reject the finished product. The cases are inspected for machining, size of pilot hole, density and imperfection of metal, by the first inspectors, after which the case is brushed inside and out with a revolving wiping apparatus. In the stamping press the date, including the day, month, and year, are stamped on the base, together with the company's private trade mark and a serial letter. When the Government examiners have made a thorough check both as to machining and defects, the gauge for all sizes, and also check up the markings already stamped. If correct, the Government acceptance mark is applied.

From each lot of 1,000 shells the Government examiner extracts three which are sent to be proved, the balance of that batch being kept at the factory until the result of the firing test is received.

When the Government inspectors have passed on the cases and placed their official stamp on them, these are taken to the patch room and packed in special wooden boxes under the supervision of a Government inspector, after which the official stamp is placed on the box.

Of further interest in connection with this description is the fact that the company maintains a tool room, employs thirty-five hands, where all tools are made or repaired, and in conjunction with this is a blacksmith's shop and tool-hardening department. The tool room is shown in the illustration on the preceding page, where the good lighting with large windows and sashes will be noted.

As there is a considerable amount of scrap brass from the machining operations, provision has been made for taking care of this. A melting furnace is installed, and here all scrap is melted down and poured into ingots.



CASES IN DISPATCH ROOM.



## THE DESIGN AND CONSTRUCTION OF INDUSTRIAL PREMISES.

BY A. ALBAN H. SCOTT (VICE-PRESIDENT, SOCIETY OF ARCHITECTS).

THE design and construction of factories and similar industrial buildings may be regarded as embracing one of the most important problems of our present, and particularly of our future, commercial life. I believe there is only one person who can fully appreciate the enormous difference effected by a properly-designed factory, and that is he who has worked in a cramped, badly-ventilated, and unsatisfactory building, and afterwards has been transferred to a well-designed works. A factory with an excellent architectural front is not necessarily an excellent factory, for a thing that is beautiful in itself and not serving any useful purpose when used in connection with industrial premises is really not beautiful. I do not mean, however, that the necessary work in a factory building cannot be made properly beautiful, nor that works should be designed without beauty. Industrial premises should indicate externally, as well as internally, that the premises are used for industry, not, for example, as a cinema palace; and it is well to remember that a works which is well-designed, properly in harmony with its surroundings, and suitable for its purpose, is not necessarily more costly than an ill-proportioned and inharmonious structure. The grammar of architecture can be just as well maintained in simple outlines and treatment as it can be in the most floral application.

*Welfare Work in Factories.*

This is the first matter with which I wish to deal. Since 1847 we have filled volumes of factory legislation, and volumes of regulations, and unfortunately throughout all this period there has been a great difference of opinion between employer and employees. Curiously enough, however, what I regard, and hope will prove to be, the means of saving such differences has come into general use without legislation—that is the welfare work in factories. What an opportunity for all parties concerned. Welfare workers in industrial works have in the past been engaged in only comparatively small numbers; to-day, however, practically all places either have them or arrangements are being made to incorporate them in the general scheme.\*

Apart from the general improvement of the works as a whole arising through this welfare work, further accommodation becomes desirable, such as proper ambulance rooms for the treatment of accidents, with a properly trained nurse on duty. For this accommodation there should be two rooms, one a waiting-room and one for treatment, the former being provided with table and chairs, the latter with proper examining chair and couch, sinks, hot and cold water (sterilised), medicine chest, properly equipped cupboard for dressings, etc., glass-topped table, and the usual other fittings of similar nature, including a stretcher. The walls and ceilings should be enamelled or tiled, the floor being also of some impervious material. These rooms should have lavatory accommodation handy.

*Rest Rooms for Women Workers.*

Rest rooms for women workers are generally placed in a position convenient

to the ambulance station, so as to enable the same nurse to take charge, these rooms being intended for use when the worker is not really ill, but only temporarily not in a condition to work. One of the principal causes of temporary unfitness has been found to be due to workers leaving home without breakfast, in which case a cup of tea and some nourishment generally restores them to a normal condition. This has in many works raised the question as to providing the whole of the employees with some refreshment during the morning, supplied at their machines or place of work—generally at a very small charge. The refreshment would be prepared at the works' canteen, with which the welfare worker is also closely associated.

*Works Canteens.*

Canteens in connection with works are now almost universally considered essential, and, instead of being accommodated in odd corners, receive proper attention and are well looked after, separate buildings being provided and equipped, so that food can be warmed up which has been brought from home, while full dinners are also provided, and a buffet, in rooms well ventilated, heated, and lighted. It is no simple matter to arrange for the equipment of these canteens. For cooking we can use coal or coke (direct heat), or gas, steam, or electricity, or a combination of any or all. Of three canteens which I may cite, one for 380 persons is fitted up for electric cooking only; another, for 350, has steam and gas; and the third, for 1,200, is equipped with steam, gas, and electricity, the last-named means of cooking being used at present for roasting only, the cost of current being high. It is questionable at what number of workers the various methods become uneconomical, taking into consideration the cost of the power per unit.

The position of the canteens in relation to the works is a matter requiring careful consideration, this depending upon the nature of the whole locality, whether the works are right in a town or on the outskirts, or far from the workers' homes, etc. As a general maxim it may be taken that if the canteen can be close to the works, but actually outside the works enclosure, better success is obtained; it is pleasanter for the workers to be away from the works during meal times. The canteen should be allowed to be used for reading and smoking after lunch, particularly on wet days.

During the principal meal times the works' gates should be closed, and the whole of the shops should be thrown wide open, all ventilating plant running full force and the premises sweetened as much as possible, so that the workers come back well nourished to a clean atmosphere. If sweeping is done in the shops during meal-times it should be arranged so that the premises are perfectly clear of dust well before the workers return.

We may now turn to matters of lay-out and construction.

*Site for a New Factory.*

So much has been written on this point that I only intend just touching upon it now. Due consideration should be given to the fact that the site may have to be used for other purposes than those immediately under consideration. For instance, the site may prove to be too small after a

fair number of years, without any possibility of extension. In that case the whole works may have to be sold and a larger site bought, and it should then be possible to sell at a reasonable profit; or the works may be used solely for a special section of the manufacturing work. The conditions of different localities vary so quickly, and the requirements of each manufactory are so different, that no hard and fast rule can be laid down. Road motor traction, except for the very heavy work, has made it possible for works to be laid out almost independent of consideration of rail and water-ways. In mentioning the latter, however, one cannot but regret that they are not brought up to date and rendered economically usable as concerning speed. Canal traffic is not in high favour at present, though many are convinced that for the transport of large quantities of goods this method of conveyance will eventually become comparatively speedy and economical. A great problem will be solved in the future by the improvement of the canal banks, enabling motor barges to be successfully used. Canals will then probably constitute the chief means of transport for certain classes of raw materials and manufactured goods.

One of the most important points is that of the levels of the site. A site purchased for a low figure may eventually prove to be a most costly one. Assuming it is necessary that the ground floor should be all on one level, for each piece of land of 200 ft. by 200 ft. the cost of levelling and extra foundations for each foot in rise would amount to an additional cost of about £250 in the building works (which should be charged to the site); and this sum will constitute a large proportion of the site value. The question of reasonable foundations is another factor which is often overlooked. A short time ago I had brought to my notice a building where the foundations alone cost £12,000 and the superstructure £30,000. Assuming that normal foundations would cost less than £1,000, the site value was at once increased by about £11,000. (It would be interesting to know if this point is considered in valuing site values for Form 4.)

Generally speaking, the selection of sites is governed by very definite points, although these frequently allow a fair amount of freedom. For country works the question of available local building materials should not be overlooked. Surely the time is coming when bricks will not be brought from one end of the country to the other when there is an abundance of local clay or sand; also, why not turn chalk to use for buildings where there are thousands of tons actually on the site? With some scientific research clay and chalk should also be capable of some local treatment to make them usable for permanent building work. Why not treat these two materials and use them together for roof coverings over roof boarding? Many say that this will not be possible for years, for have they not tried portable plant for making sand-lime bricks and not succeeded? But is this not due to the absence of proper scientific research? Fortunately, however, we have now one building material which can often be used in conjunction with local materials—that is reinforced concrete.\* For any work of

\* For details of welfare work see "Welfare Work," by E. Dorothea Proude.

\* See "Reinforced Concrete in Practice," by A. Alban H. Scott.



reasonable extent a washing and crushing plant can be put down for treating the rock or ballast, and sand obtained, *if not actually* on the site, in the locality, this material representing in normal times a very large percentage of the total cost. This brings us on to the question of maintenance of buildings. The cost of maintenance of large industrial premises is of serious moment, and the choice of material requires careful attention, particularly for those parts where heavy wear and tear is anticipated. With reinforced concrete no maintenance is required.

Roofs.

Roofs are generally one of the large items. I have found that mineral rock asphalt is about the only material which gives a good roof covering upon which there is practically no maintenance. But it must have a properly prepared foundation, such as felt and expanded metal, if laid on boarding, both to gutters and slopes of roofs, and it is also desirable to lay it on the same foundation for slopes on other materials—reinforced concrete, for example. Mineral rock asphalt requires no yearly treatment, and can be walked upon without damage. It should be remembered, however, that it is fairly heavy, weighing about 13 lb. per foot super for every inch in thickness. The usual thickness for roofs is 3/4 in., laid in two layers,

which would give a weight on the roof of about 9 3/4 lb. per foot super.

Floors.

Floors are perhaps the most difficult of all points to settle, both as to original cost and cost of maintenance. Floors formed of concrete and only spade-finished are totally unsuitable. Some applied paving over the concrete must be laid. Of these there is a vast field to choose from, but a few may be mentioned, together with their approximate cost for a shop having an area of 60,000 ft. super, all these materials being laid in situ.

Cement paving (cement and sand)	£ 700
Metallic paving (steel slag and sand and cement)	850
Granolithic paving (granite chips and ditto)	850
Fir boarding laid on battens	1,650
Pitch pine boarding	1,800
Blue brick paving	1,800
Maple boarding	2,000
3/4 in. mineral rock asphalt	2,200
Patent jointless flooring	2,333
Wood blocks in maple	3,000
Wood blocks, 3/4 in. creosoted	3,900
Wood blocks in oak	4,100

Each of these pavings has its own advantages and disadvantages, so that every building must be considered separately.

It should be pointed out that the different pavings have a material effect upon the cost per ft. cube. For instance, if shops of the same dimensions were taken, the difference in cost per ft. cube between the metallic paving and the wood blocks would be 0.64 of a penny, which is a large proportion, as shops of this description would have cost only about 2.20d. before the War.

The cost here given is per cubic foot, but, as mentioned later, this is not necessarily the most convenient method of reducing building costs to a unit.

The consideration of floor costs leads on to the question of one-floor buildings as compared with buildings of several storeys. Without exception, I have found that even taking into consideration the value of land up to £2,000 per acre, extra works, roadways, etc., required, the cost of one-storey building is less per super of floor area and very much less per foot cube than a building of several storeys having the same floor area.

In certain businesses upper floors are necessary for the economical working of the gravity of the various processes, but where this is not essential works of one floor only are more advantageous in every way.

In a structure of many storeys in the provinces or country districts (where the principle of framed buildings has not been allowed in the by-laws) enormous thick walls are required as compared with those under the L.C.C. Acts and Regulations for steel and reinforced concrete framed buildings. There is quite a difficulty in convincing the local authorities that in London we can put 9 in. or 14 in. walls for the ground floor storey of a building. It is always interesting (and often very expensive to the building owner) to watch how hard the local authorities, even those on the borders of London, will cling to their out-of-date by-laws. Would it not be a lasting benefit if the London Building Acts and Regulations were adopted for the whole country subject only to special regulations for farm buildings as farm structures.

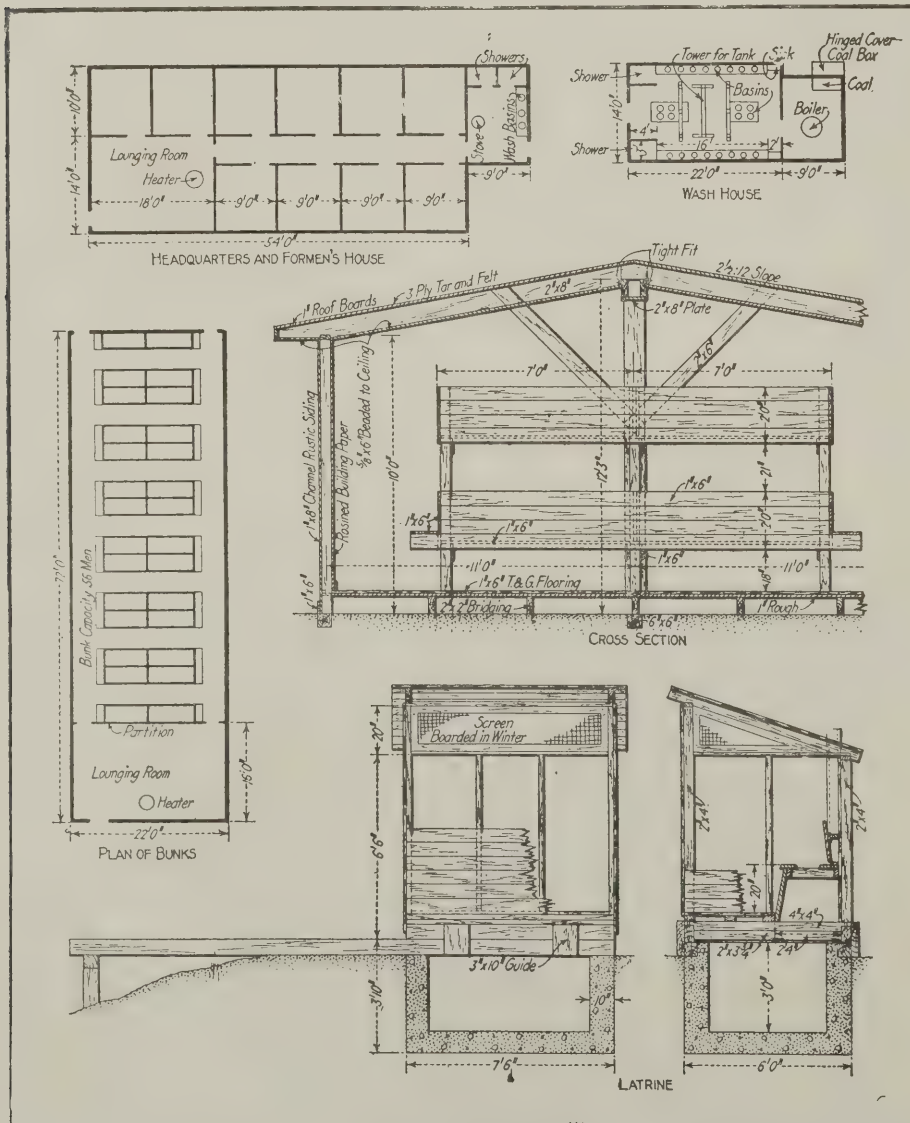
(To be concluded.)

HUTMENTS FOR A CONSTRUCTION CAMP.

In the carrying out of buildings and other works of construction on sites which are far away from a town it sometimes becomes necessary to provide temporary hutting accommodation for the workmen. In view of this the accompanying illustrations are of interest, more especially as they show a type of hutment designed for use in very cold and rough weather.

The hutments in this case comprise two buildings (with separate roof, shower baths, and rest rooms) for the foremen and office staff, four large hutments for the workmen (with bunks), a central washhouse, a hospital, and an incinerator. Hot water is provided for the camp by a boiler placed near the main tank at one end of the washhouse. All the buildings have double walls and floors, and are easily warmed by large coal heaters. A feature of the camp is the latrines, which are built on skids over concrete. Every week in cold weather the skids are slid back out of the way and the contents poured in the pits, set on fire, and the contents burned out.

The large mess hall, with a kitchen and a small commissariat at one end, seats 100 men.



HUT CONSTRUCTION FOR COLD AND EXPOSED SITE.



# A LARGE SINGLE-SPAN STEEL ROOF.

FOR many buildings of a military nature—notably, drill halls, airship sheds, and aeroplane hangars—it is necessary to have an absolutely unobstructed floor area, and on this account it is interesting to study the accompanying illustrations, for though these relate to a building which is not specifically a War building, the details of construction are eminently adaptable to certain military constructions in considerable request at the present time.

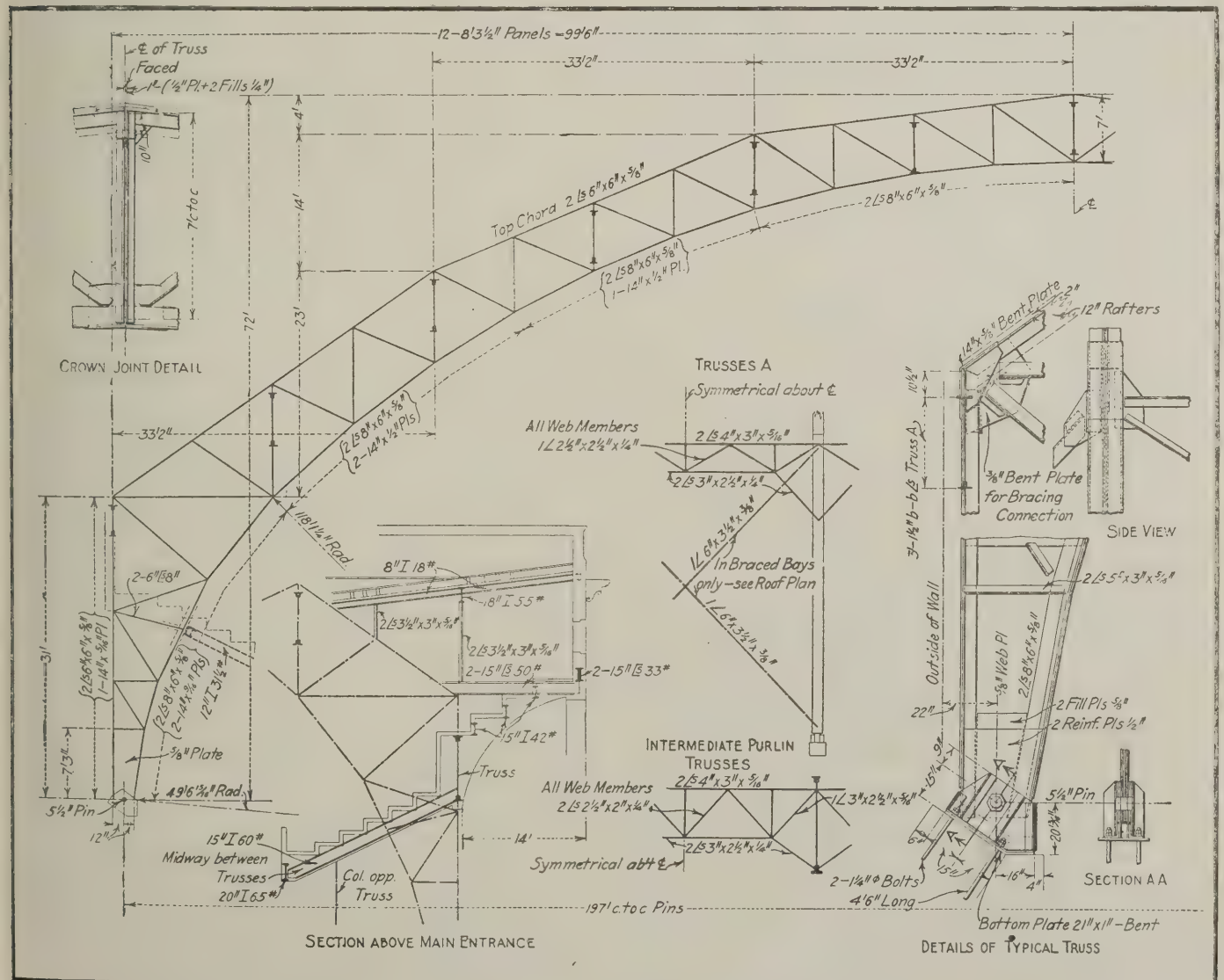
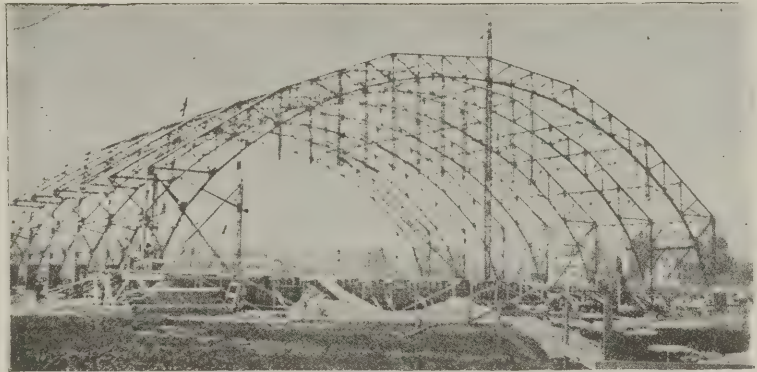
The dominating feature is a series of ten main arch trusses spanning nearly 200 ft., without tie-rods at floor level, and each weighing about 30 tons. The concrete foundation piers were designed to resist the arch thrusts, later modification in the design being required because of difficult foundation conditions. Further, the main walls were supported upon reinforced-concrete beams connecting the arch piers, thus ensuring a greater load on these piers to aid in resistance to sliding.

The ten steel trusses, 72 ft. high at the centre, support the main roof, which contains skylight in the interior bays. The spacing and form of the trusses were determined mainly by architectural considerations. The building is divided into eleven bays, and the end trusses carry the suspended framing for end walls, which in turn carries the I-beam rafters for the flat roofs in the end bays of the building.

Diagonal angles in the plane of this roof, as shown in the quarter-roof plan on the next page, transfer wind pressure to the side walls. Necessary excavation at the corners of the building precluded the use of tie-rods between the ends of the end trusses 1 and 10. It was therefore decided to omit all tie-rods throughout the building and make the foundation piers and end details practically the same throughout. Another consideration in the decision not to use tie-rods was the fact that these rods would be within 2 ft. of the finished floor surface. The main arches were designed

as three-hinged trusses, with the usual pin ends, but with an abutting joint at the crown, as shown. Bearing plates and faced surfaces were used at the top-chord joint, and an expansion joint with bolts and slotted holes was provided at the bottom-chord joint. The purlins between the main trusses were made vertical, triangular trusses being used instead of I-beams, both because they were estimated to be more economical and because it was believed the appearance was improved thereby.

The live loads taken ranged from 40 lb.



per square foot of horizontal projection to 30 lb. per sloping square foot, depending on the angle of slope.

The foundation piers for the arch trusses had to be modified twice to meet the conditions due to weather and water, the site being close to a river. Unusual high water created excessive pressure at the bottom of the foundations, so that the 3-in. sheet piling used could not withstand it. It was also found impossible to keep the water down by force pumps, and finally it was found necessary to deposit the concrete under water by the use of buckets opened very slowly so as to prevent washing. After about 3 ft. of concrete had been placed in this way, the remaining water was pumped out and the foundation finished in the usual manner.

The changes in the design of the piers consisted essentially in making the bottom of the excavation level and depositing concrete to a depth of 2 ft. on the front or interior face and to a depth of 5 ft. on the rear face, the top surface of this bed then being perpendicular to the thrust of the arch. Five foundations in the rear were placed in this manner, when it was found possible to make the sloping surface at the bottom by excavating carefully under water with a bucket. The 3-ft. layer was then deposited under as described above, the water pumped out, and the remainder of the foundation cast.

The character of the soil,  $3\frac{1}{2}$  ft. to 4 ft. of loam,  $3\frac{1}{2}$  ft. to  $4\frac{1}{2}$  ft. of fine yellow sand (water at 7-ft. depth), and 3 ft. of river silt underlaid by coarse grey sand, made it economical to use reinforced-concrete beams between the main piers to support the outside brick walls of the building. These beams, shown in the upper illustration on this page, varied from 8 ft. to 9 ft. in depth, and were cast with pockets to allow the main trusses to be placed.

Rapid erection of the ten steel trusses was accomplished by a special traveller, 40 ft. by 40 ft. on plan, with two stiff-leg derricks having 80-ft. booms and 15-ft. outriggers, making a total length of boom of 95 ft.

The exposed site, with strong winds, made it essential to hold the first two



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

JANUARY 31, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1152.

FOR reasons that are only too easily understood, rights of light cases have been infrequent of late. Last week, however, a typical action was tried by Mr. Justice Neville in the Chancery Division, and the case emphasises an after-the-war danger to which we have frequently called attention. No fault can be found either with the claim or with the judgment in the case under notice, in which a draper gets £150 damages on evidence that the erection of a wall thirty feet and a half high diminished the light formerly enjoyed. In this instance, there can be no doubt that the law as it stands was justly interpreted on both sides; our contention is that the law as it stands is a deterrent to building, and, as such, will operate against the great business developments that should ensue immediately upon the release of men and materials. As long as every attempt at expansion involves the imminent risk of costly legal proceedings the law acts as a restraint of trade. To an appreciable degree it discourages business enterprise, and this drawback, serious enough in normal times, will be realised in its full enormity when every nerve is being strained to undertake the arrears in building and thenceforward to get ahead of our foreign competitors.

Nothing could be gained by ignoring the difficulties of the position. It may be taken for granted that a man whose business interests are injured for the advantage of an adjoining owner is entitled to compensation. How is the amount of the damage to be determined? Until the adjoining premises are erected, and even afterwards, the extent of the injury is merely conjectural, and the estimate depends on matters that are far less firm and solid than ascertainable facts—that are always disputable. If, then, the extent of the injury can be at best merely approximated, assessment in advance of building is on much the same footing as approximation after it; and a scientific (and of course independent) forecast should be as true and just as the "findings upon the facts" of a court of law. Permission to build—the passing of the plans by the properly constituted authority—could stop all possibility of litigation on any question of ancient lights. Any person feeling aggrieved could be allowed or required to lodge his objection to the plans before they are passed, and should be afforded no further opportunity of obstruction. Some such method as this is already in operation in many countries, and apparently involves no hardship or injustice. On the other hand, the English system is a constant worry and menace to architect, builder, contractor, and building owner, is in restraint of trade, and is liable to grave abuse.

Concerning the great explosion, it would be as futile as gratuitous to insist that no such calamity could have been possible within a thickly populated area. All considerations are subsidiary to military necessity, and it is not to be supposed that high explosives would have been accumulated "somewhere near London" if this hazard could have been avoided. But it is one thing to take a risk, and another to repeat it after it has turned out disastrously, and we may therefore be fairly certain that future munition works will be kept away as far as possible from centres of population. It is perfectly obvious that the danger to, as well as the danger

from, explosives works is greatly accentuated by their proximity to towns, which, in particular, multiplies and magnifies the fire hazards. There are, however, dangers and inconveniences from isolation. Isolated factories could be more easily located by hostile aircraft; and the problem of housing the workers would become more difficult. This war found us, contrary to the allegations of the enemy, unprepared; but it may be taken for granted that the lesson has not been lost upon us, and our readiness for future contingencies will certainly include a well-considered scheme of munition manufacture, reasonably free from the liability exemplified by the great explosion.

For a radius of many miles round the scene of the explosion windows were shattered—with the most capricious incidence. At each end of a row of a dozen shops a window was driven out, the intervening shops remaining uninjured. In the more remote districts it was only the large expanse of plate glass that suffered, small panes of common glass remaining intact. It has been suggested that the thin glass, besides presenting a smaller surface to the shock, owed its immunity to its greater elasticity; while the more rigid plate glass, lacking the support or protection of cross-bars, and having comparatively little inherent resiliency, could not deflect and recover, and was pushed in to breaking point; but the free play of the sash-frame would sufficiently account for recoil and recovery. The fable of the lily which bowed to the storm and the oak that broke under it is therefore hardly relevant.

Probably some of the plate-glass windows that escaped destruction while outwardly similar sheets on each side of them were shattered owed their safety to their less rigid fixing, and to the presence of a proper bedding of soft leather—points to which the shop-front glazier, as well as the glass manufacturer and the architect specifying such work, will now give increased attention, not in view of further explosions, but as a precaution against more common jars and vibrations. Not long since some of the very shops that have now suffered had their windows blown out by a natural hurricane. It is not likely, however, that such occurrences will convert the shopkeeper from his unholy craze for vast expanses of glass; nor will the inability to secure immediately either glass or glaziers convince him of his folly, which is largely imitative—a matter of rivalry and vanity. West-End shopkeepers having set the bad example of the "unobstructed view," it then became the ambition of the suburbs to follow the leaders. A huge expanse of plate glass looks opulent, and whether or not it has all the advantages claimed for it in affording an uninterrupted and shadowless view of the display behind it is a secondary consideration. As to its deadly effect in destroying the architectural effect of the building above it, that, to the average citizen, is a matter of no importance whatever. To follow custom and impress the customer is the sole concern of the trader, who, however, must often find occasion to anathematise a fashion that makes a broken window a calamity of considerable magnitude, especially at a moment when glass and labour are scarce and dear.



## THE SMALL TOWN HOUSE OF THE EARLY VICTORIAN PERIOD

[SPECIALLY CONTRIBUTED BY A. E. RICHARDSON, F.R.I.B.A.]

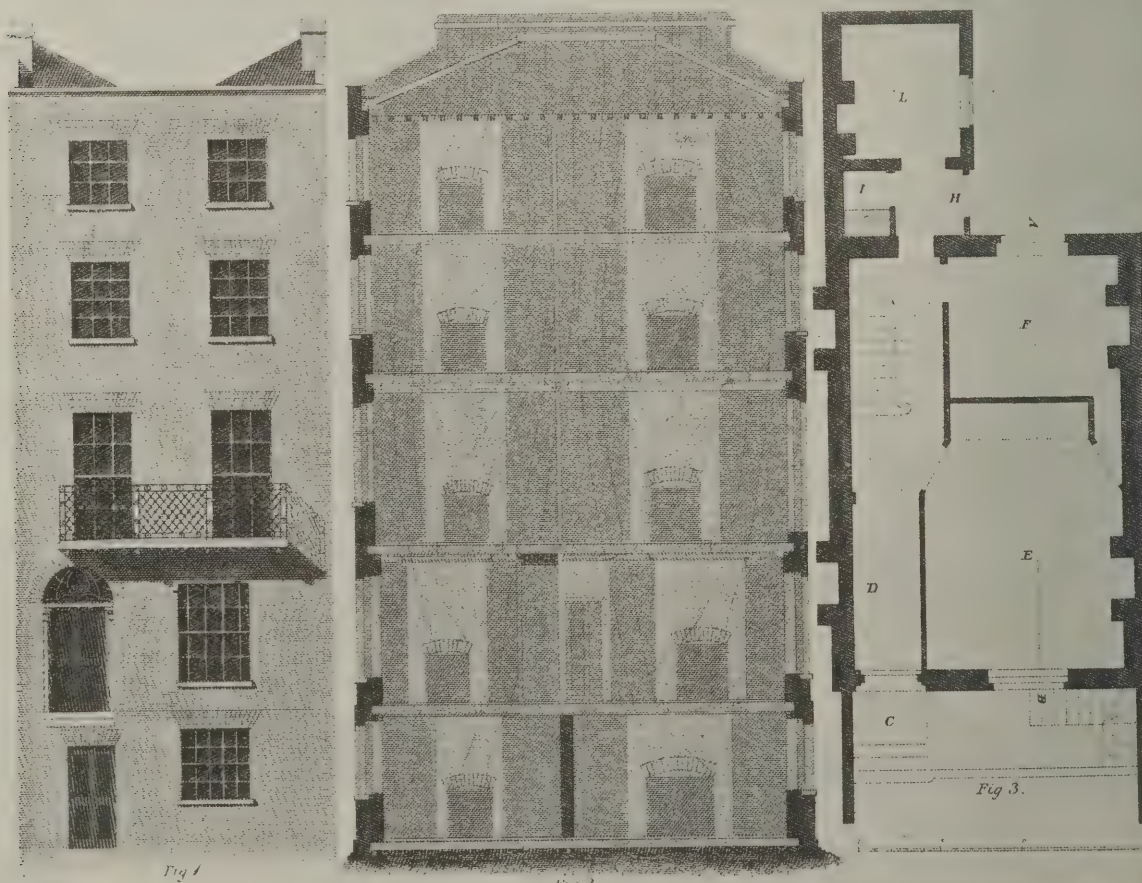
AUTHORITIES on the subject have little difficulty in assigning the date of erection to the majority of the town houses which were built from the time of Charles II. to the accession of Queen Victoria. They can hardly be restrained from adding information as to the precise hour in the morning when the last coat of paint was applied and the first vanload of furniture was moved in. At first sight this seems to be daring assumption, but when it is taken into consideration that the streets of London form the background to three centuries of history, and the portraits of kings can be seen in the design of doorknockers, while the elegances of the beaux are reflected in the vase tops to area railings and the dimensions of sash bars, the power of divination becomes more credible.

The dawning of a distinctive change in architectural taste is interesting for the exhilarating freshness of the style and the ingenuity displayed in handling new materials and other varied problems. The middle period shows a strengthening of opinions and a bias for certain forms made common by experience. The tertiary or final period shows the developed style at its last gasp. The early arrangements in planning have been reduced to a science, and architectural expression has been strained to its limit.

This is particularly the case in regard to the development of the town house, where limitations of site, of cost, and of social grade, as well as the honesty or otherwise of the speculative builder, have in turn contributed to the particular expression of the brick faces

and pleasant windows that confront us to-day. The earlier phases of the tradition are so well understood that it is as well to note what its aspects were, and how the time-honoured features of design were humoured by the architects and builders who were prosperous when Queen Victoria was a girl of nineteen.

The first-rate house of the year 1837, such as exists in Belgravia, Mayfair, and Kensington, as well as in the northern parts of Bloomsbury, the New Square, and on the Portman Estate, exhibited certain architectural novelties with a pronounced bias for Greek details in some cases devised by the plasterworker. The lower ground storey was stuccoed to represent rustication, and in some cases this treatment was extended to the embellishment of the first floor, where, instead of a cast-iron or wooden verandah, which could be bolted separately and attached to the balcony front, columns or pilasters carrying an entablature with flat arcades and ornamented with wreaths and honeysuckles, were considered the best method of expressing the new gentility (see plate). Perhaps the architect was too ready to give emphasis to the fact that the whole of the first-floor pair was given up to the drawing-room, and that besides an improved pianoforte the occupant possessed a harp. There is additional evidence of the fondness of the Early Victorians for musical accomplishment at this period, for the lute and the lyre were both introduced as *motifs* for the iron balcony front. Casement windows were a feature of the drawing-



C, Entrance; D, Passage; E, Dining-Room; F, Study; I, Water Closet; L, Store Room.

"THIRD-RATE" LONDON HOUSE OF THE EARLY VICTORIAN PERIOD.



room, the fireplaces were invariably of white marble, with ribbed pilasters and pateræ at the corners, and similar detail was a feature of the architraves and cornices. It should be remembered that at this date the furniture had not taken on the ponderous character it assumed ten years later. In the main the mahogany, rosewood, and walnut pieces reflected a coarsening of French Empire taste, with perhaps an example or two following the later Sheraton models; the craze for quasi-Louis Fifteenth chairs had yet to manifest itself. If a sure index is needed to prove the lack of vitality in the style of this period, it will be found in the detail of the spearheads to the area railings, which have none of the finesse of the earlier examples. Turning to the plan of a house of this type, which would form the town domicile of a family with a residence in the country, we find that Major Ponto, of Mangelwurzelschire, was content with a plan similar to that which the Brothers Adam designed for his father, General Ponto, in Fitzroy Square. There is the usual front area, a large front kitchen, the indispensable wine cellar, servants' hall, butler's pantry, and storeroom. Approaching the front door up five broad steps the visitor was confronted by an Italian doorway, whose fanlight reflected the shapings of a Sheraton bookcase. The sphinx-headed knocker looked askance at his blue frock-coat and nankeen trousers, and caused him involuntarily to adjust his cravat. Having gained admittance, he was shown into a vestibule seven feet wide, and finally ushered into the library or allowed to ascend the geometrical staircase and enter the drawing-room.

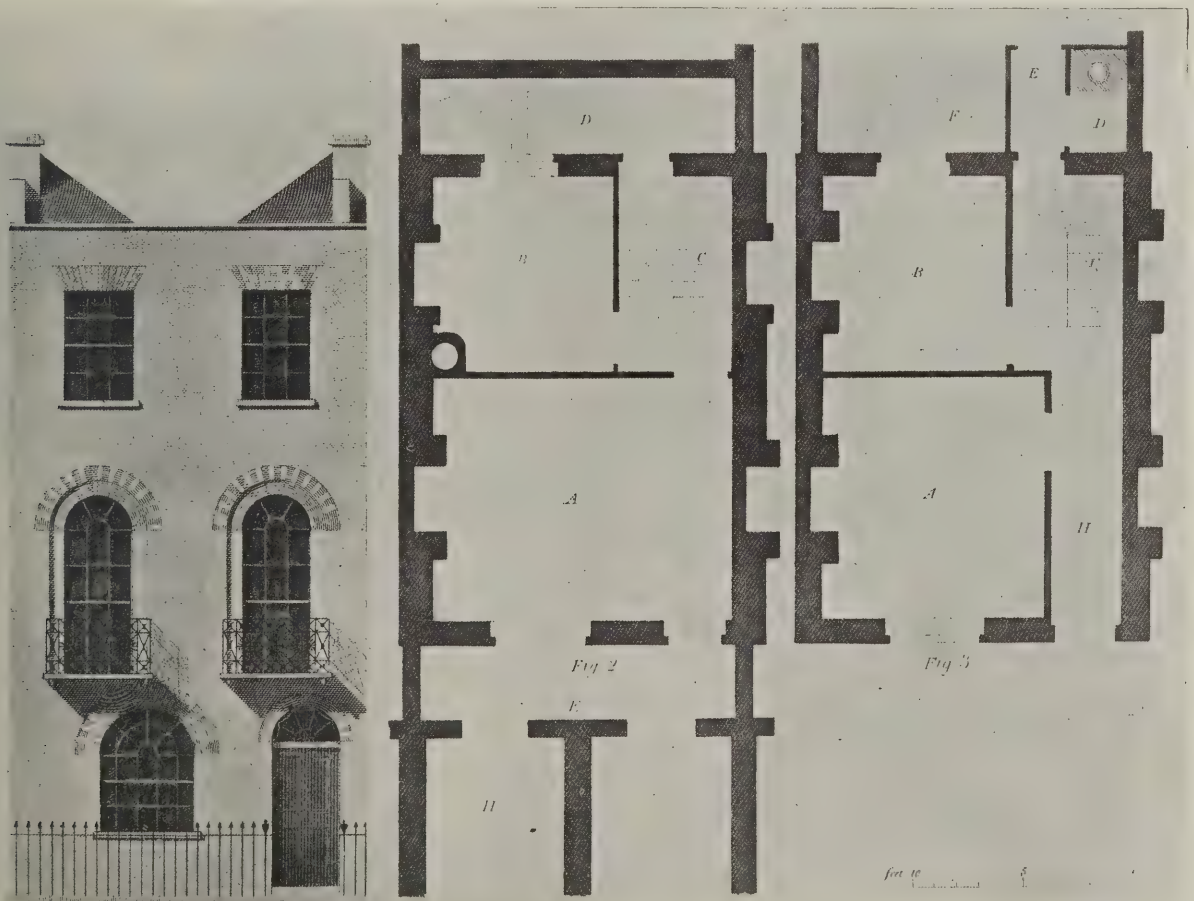
At five o'clock he took his seat in the dining-room and contemplated the columns forming the sideboard recess, a process continued for two hours from the time

dinner started, and enlivened by port and sherry, together with entertaining tales of John Company by Major Ponto. "Neat place this, Ponto," the visitor may have remarked; "who designed it?" "A man named Nicholson," returns the Major; "it is something similar to my brother's house on the Parade at Cheltenham by another architect fellow, Papworth. But, by George, Sir, these brick boxes are not a patch on my father's old house in Fitzroy Square, or Mulligatawny's mansion in Portland Place. But the rent is a consideration in these days, and four hundred a year is not out of the way."

Upstairs the harp and the pianoforte announce to the gentlemen that their presence is required aloft, so we take our leave in search of the second-rate house, noting on our way out that the Major's bathroom was on the ground floor at the back of the staircase.

In those days a cabriolet would have taken us to Bloomsbury. There were plenty of cabmen making their way to the Euston terminus of the London and Birmingham Railway, and we should have stopped the driver in Russell Square, and explored the locality of Coram Street or Tavistock Place.

In 1837 the briefless barrister with private means would have occupied a three-storey house with two front windows, denominated in Early Victorian parlance a "second-rater." The chief architectural attribute of a house of this type is the continuous balcony framing-in the first-floor windows, and forming a semipent to protect the front door. The sturdy Doric columns have little to do beyond carrying a nine-inch entablature, above which the pleasant eye of the fanlight welcomes the visitor. Here we find the vestibule reduced to five foot six, for space is limited, and fine scale is demanded in the dining-room. The staircase



Basement (Fig. 2): A, Front Kitchen; B, Wash-house; C, Stairs; D, Back Area; E, Front Area; H, Cellar. Ground Floor (Fig. 3): A, Dining-Room; B, Back Parlour; C, Stairs; D, Water Closet; E, Yard Entrance; F, Stairs to Back Area.

"FOURTH-RATE" LONDON HOUSE OF THE EARLY VICTORIAN PERIOD.



is of the dog-legged type, with plain wooden balustrading and slight mahogany rail. The dining-room has quadrantal corners at the sideboard end, and a flat cornice enriched with vine leaves. "Come in, my boy," says Mr. Briefless; "dinner will be served at five, and afterwards we can enjoy some music. My wife is in the kitchen now dealing with a refractory cook. Later on Scribbler, who writes for the 'Edinburgh Review,' has promised to come for cards, and it is possible that Buxton the architect will look in." "You have a snug nest here, Briefless." "Yes, not so bad; only £125 a year on a repairing lease. The bother is that so many of these houses are being leased to landladies, who sublet the rooms in pairs; it lowers the tone of the neighbourhood; but what can you expect with a woman on the throne?" A pleasant evening is passed under the roof of this garrulous barrister. Scribbler and Buxton turn up, but the latter has to leave and catch the night mail from Euston to Birmingham, so we leave too, and reserve our quest for third-rate houses till the next day. Myddelton Square, Islington, is the best place to see the third-rate London house of the period. The younger Milne, in his capacity as architect to the New River Company, built many such. We select a suitable house, and standing on the opposite side of the way admire the plain front and note the coping-stone cornice. In 1837 this house would have been occupied by a prosperous tradesman from Finsbury or Cheapside, whose wife was too proud to live over her husband's shop. They had risen in the world, and were able to afford a chaise and a horse, which made its appearance daily from the adjacent mews. It was right that carriage-folk should live in a three-storeyed house, and keep two servants, with a washer-woman every Tuesday. In addition, they owned part of a share in the New River Company, and felt a becoming pride in living on the estate. "Besides it was so healthy, and the views of Highgate and Hampstead from the top of Pentonville Hill were so attractive." What did it matter that Merrie Islington was so close? The shops were convenient and the new line of omnibuses from Paddington to the City made travelling a delight. "We have all the benefits of the country at our doors," said Mrs. Finsbury to her lady friends, "and such refined society. Nearly all the residents in the square have irreproachable connections, and Mrs. Aldgate's fourth cousin married a Member of Parliament." The entrance vestibule in a house of this type rarely exceeds four feet six. There was not enough money to provide for quadrantal ends to the dining-room, so splayed ends had to suffice. The enrichments in the drawing-room were likewise reduced to a minimum, but the trellis balcony seen through the tall windows more than atoned for this deficiency. Mrs. Finsbury and her spouse occupied a front pew at the church in the centre of the square, and regularly contributed to the society for providing the blacks with flannel waistcoats.

Seldom was it that Mrs. Finsbury deigned to pass through the smaller streets that bounded the lordly Claremont Square to the east. To do so meant crossing the New Road, and that would have been unthinkable.

Mrs. Finsbury enjoyed life at a time when a continuous stream of coaches passed through Islington, when hearth-rugs, showing a mail coach and team of bays in full swing, worked in wool, were eagerly coveted by Islington ladies; and this remark brings us to the description of the fourth-rate house. Eighty years ago the fourth-rater was the equivalent of the bay-windowed six-roomer of the outer suburbs of to-day. But comparisons are more than odious; they are impertinent. The fourth-rate house was the outcome of a demand for accommodation on the part of clerks and artificers employed in the City. It was essential that these houses should be near the Bank, within walking

distance, to be precise; as a result the vacant land between Islington and Moorfields was gradually built over. Thomas Hardwick built the fourth-rate King Square, which is representative, and a host of small builders, joiners, bricklayers, and others started to speculate in a small way on plots in Somers Town and Barnsbury. Travellers on the northern coaches must have noted the forest of scaffold poles stretching from Islington to Highbury, from Hoxton to Stoke Newington, from Whitechapel to Bow, and from Notting Hill to Acton, and from the Elephant and Castle to New Cross. London was beginning to absorb the outlying villages. The fourth-rate house of 1837 was eminently genteel; it had three reception-rooms and four bedrooms. There is an interesting group of fourth-raters at Grafton Terrace, Seymour Street, near Euston Square; there are others at Clarendon Square, Somers Town. The front passages are three feet wide, the dining-rooms ten feet by twelve, and the drawing-rooms fourteen by twelve: the underground kitchens are curious survivals of the oubliette of mediæval times. It was in these cavernous recesses that the dowdy slavey of the time cooked the joint o' Sundays, ironed the clothes, and generally ministered to the needs of the occupants. The first-floor pair were usually let to elderly spinster ladies who had known better days, or to single gentlemen of Mr. Pickwick's standing. The roofs are of the form known to slaters as M. In the front they are partly masked by the parapet, but at the back they present an endless serration, interspersed with chimneys of varying degree. Yet the rents varied from £35 to £45 a year, and Mrs. Bardell, as well as Mr. Scrooge's clerk, had to scheme very hard indeed to sublet the vastnesses which they could not enjoy for their own use. Even the fourth-rater boasts a well-designed first floor balcony. There is also an affectionate leer in the fanlight which, together with the cast-iron hand-and-wreath door knocker, inspires confidence, as it did eighty years since, when timid ladies and well-to-do gentlemen inquired the cost of apartments from obliging landladies.

Fifth and sixth-rate houses are in existence, too, but they are beyond the scope of this account, and are to be found in the purlieus of Shoreditch and Bethnal Green. There is one outstanding feature about these very Early Victorian houses; that is their uniformity of style, which, despite opinions to the contrary, is never monotonous. It is rare to find two balconies alike, the doorways are treated in a variety of ways, and the choice of door-knockers is endless. By comparison, with modern comforts, the internal arrangements are primitive, but a sense of space is common to all, and if exception is taken to the standardisation of types a most thorough appeal to the imagination is manifest by the fact that these houses are essentially a product of London, and have a style of their own which is distinctly metropolitan. We have recently seen what can be done to improve on this peculiarly English manner in the rebuilding of the Duchy of Cornwall Estate at Kennington.

## THE PLATES.

### *Early Victorian Town Houses.*

These are described in the article on page 56.

### *No. 18, Bryanston Square, London.*

The work carried out at this West-End house, from designs by Messrs. Robert Atkinson and H. L. Alexander, is of very refined character, the enrichments especially being handled with much skill and restraint.

### *A Motor Engineering Works.*

Particulars of this new building are given on page 64.



# FIRST-RATE HOUSE.

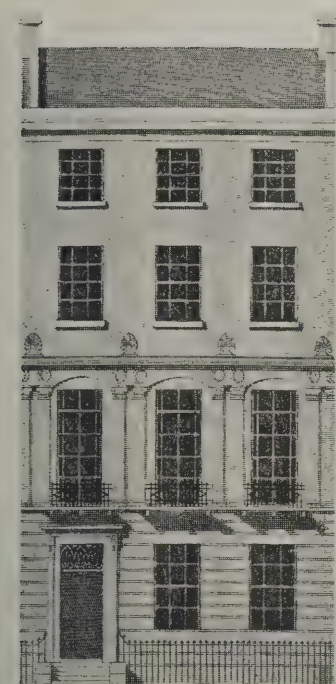


Fig. 1.

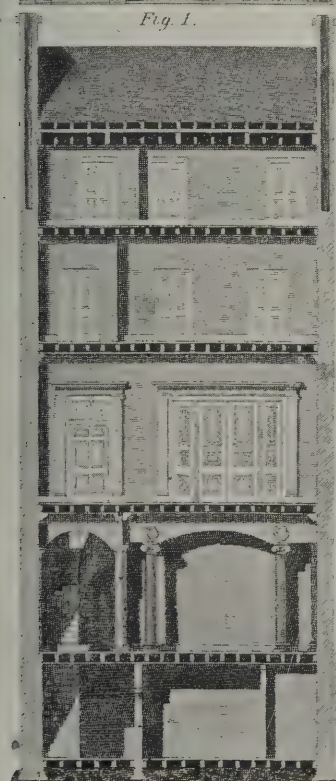


Fig. 2.



Fig. 5.

10 5 0 10 20 30 40 50 feet

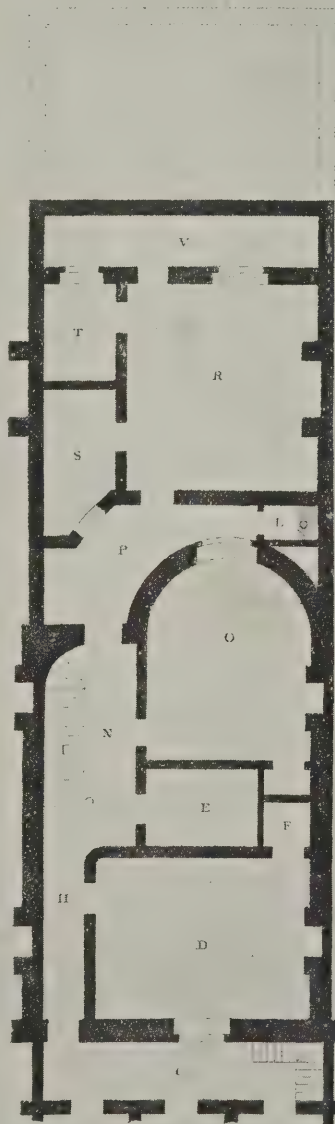


Fig. 3.

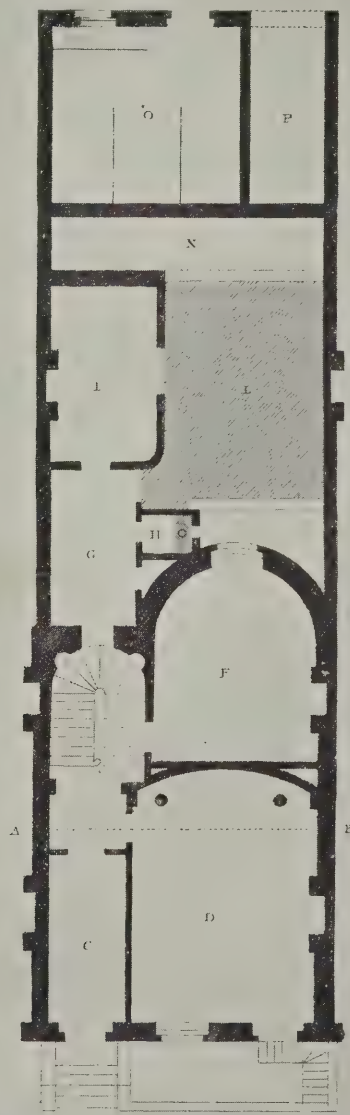


Fig. 4.

Fig. 1, Front Elevation; Fig. 2, Cross Section on line A-B, Fig. 4; Fig. 3, Basement Plan; Fig. 4, Ground-floor Plan; Fig. 5, Elevation of Coach-house.

Accommodation.—Ground Floor (Fig. 4): C, Vestibule; D, Dining-Room; F, Library; G, Passage Room to Water-Closet, H, and Bathroom, I; L, Lead Flat over Servants' Hall; N, Area; O, Three-stall Stable, with Bedrooms over; P, Coach-house. Basement (Fig. 3): C, Area; D, Front Kitchen; E, Wine Cellar; F, Cupboard; H, Passage; I, Stairs; N, Passage to O, the Back Kitchen L, Water-Closet; R, Servants' Hall; S, Butler's Pantry; T, Store Room; V, Area.

EARLY NINETEENTH-CENTURY ARCHITECTURE (SERIES II.). I.—A "FIRST-RATE" HOUSE OF 1837.

DESIGNED BY M. A. NICHOLSON.





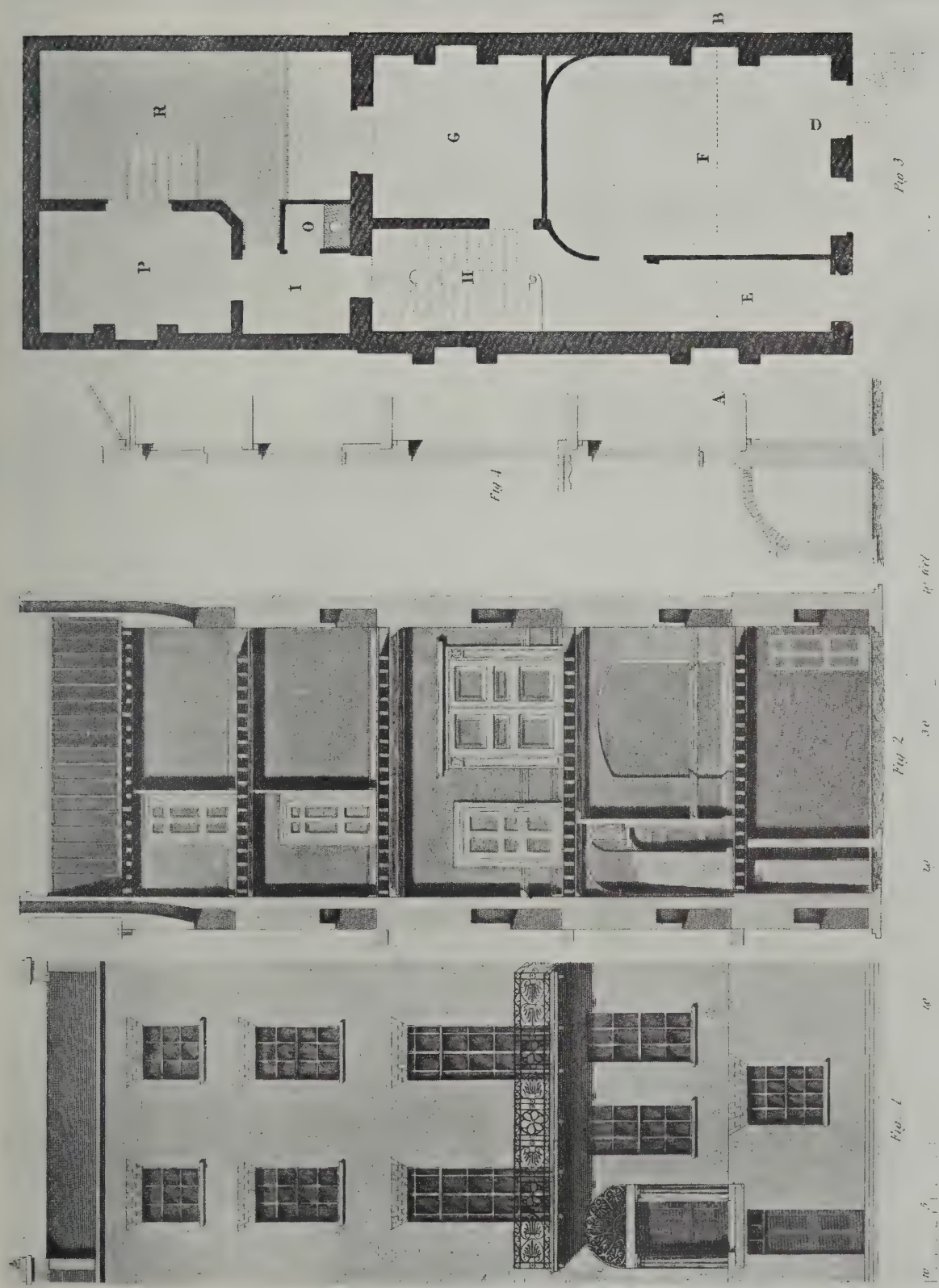


Fig. 1, Front Elevation; Fig. 2, Cross Section on line A-B (Fig. 3); Fig. 3, Ground-floor Plan; Fig. 4, Section of Front, on C-D (Fig. 3), showing Floors, Accommodation on Ground Floor (Fig. 3): C, Area; E, Vestibule; F, Dining-Room; G, Library; H, Staircase; I, Passage-Room to Water-Closet O and Bathroom P; R, Lead Flat over Back Area, covering Wash-house.







*Photo: Bedford Lemere & Co.*

MODERN DOMESTIC ARCHITECTURE (SERIES II.). XLVII.—MORNING-ROOM, 18, BRYANSTON SQUARE, LONDON, W.  
ATKINSON AND ALEXANDER, ARCHITECTS.





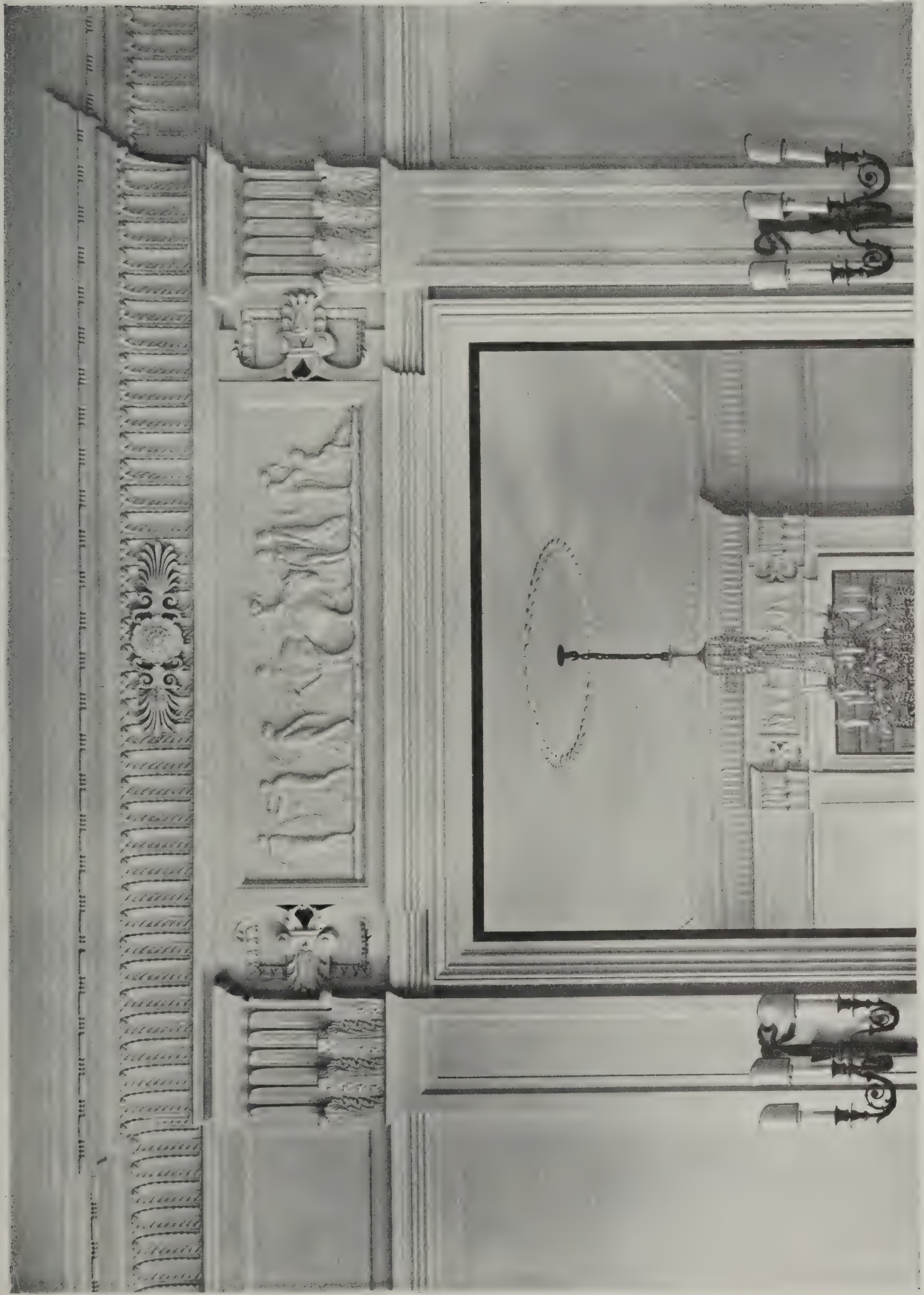


Photo: Bedford Lemere & Co.

DETAILS OF CRAFTSMANSHIP (SERIES II.). XXI.—ENRICHMENT TO OVERMANTEL IN MORNING-ROOM, 18, BRYANSTON SQUARE, LONDON, W.

ATKINSON AND ALEXANDER, ARCHITECTS.



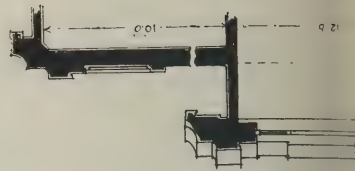
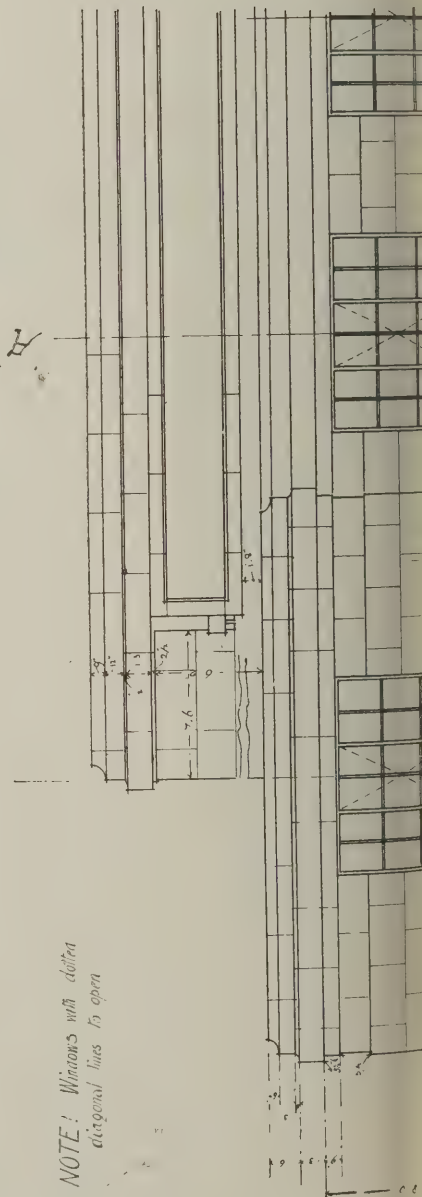
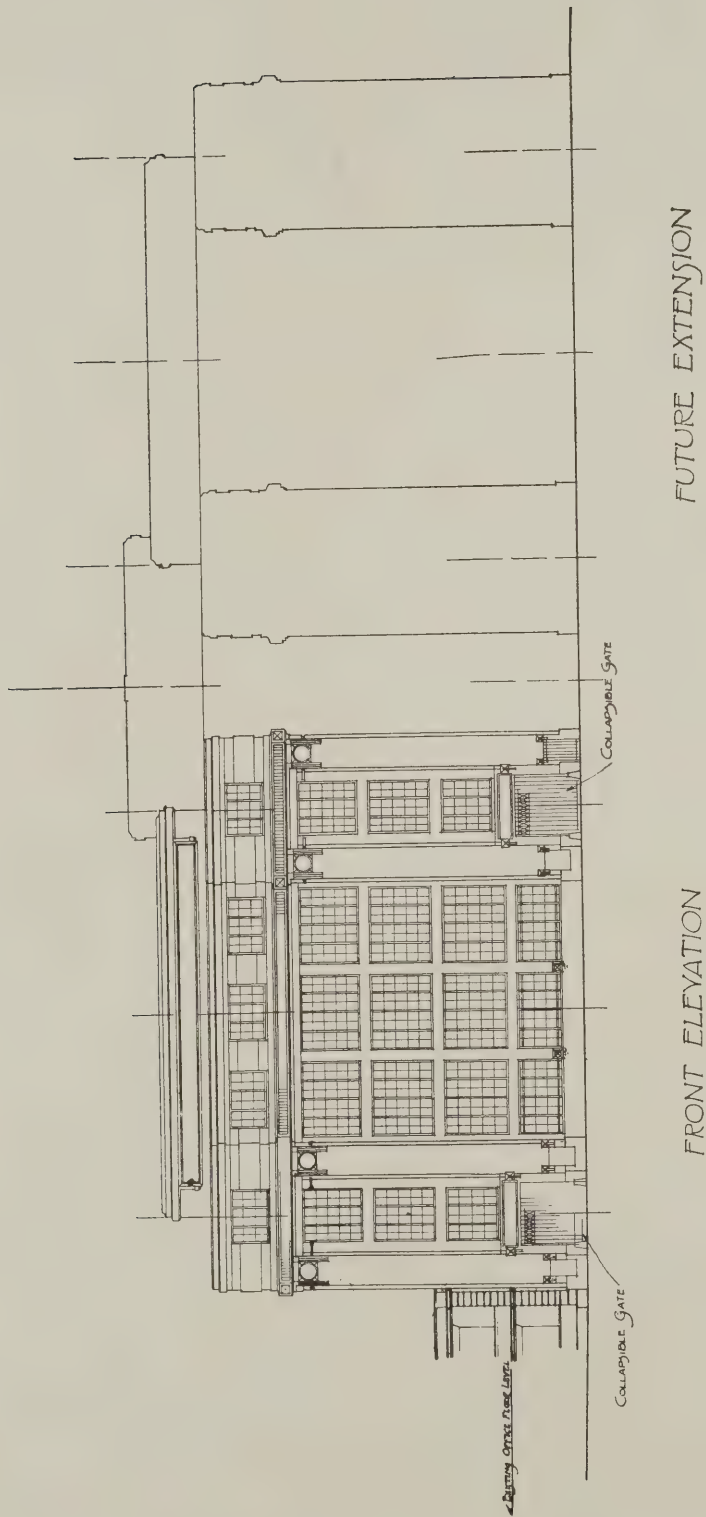


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## LEGAL.

## Light and Air Dispute.

*Baker v. Ward.*

January 22-23. Chancery Division. Before Mr. Justice Neville.

In this action Mr. Elias Baker, hosiery, tailor, draper, and outfitter, of 86, Fisherton Street, Salisbury, was the plaintiff, and Mr. Albion Ward, of Weymouth House, Salisbury, theatre proprietor, the defendant.

The plaintiff sought an injunction restraining the defendant from erecting any building interfering with his rights of light.

Mr. C. E. E. Jenkins, K.C., and Mr. Archer (instructed by Messrs. Pye-Smith and Hulbert, Salisbury) were for the plaintiff; Mr. Holman Gregory, K.C., and Mr. Manning for the defendant.

Mr. Jenkins said that the premises affected in this action were a draper's shop in Salisbury, and the obstruction was caused by an erection on the east side of this building. There was a claim for an injunction, but apparently that was now too late, and then the action would come to a question of damages. The defendant had paid £50 into court. Fisherton Street is a broad thoroughfare, running practically east and west, and Chapel Street, a narrow thoroughfare of 9 ft. 6 in. across from building to building. The plaintiff's shop has windows looking into Fisherton Street. Defendant was interested in cinema theatres, and purchased the old chapel site in Chapel Street, including the forecourt, and while he had left the old chapel wall standing he had enclosed the forecourt with a wall which was a little higher. The height of the new wall was 30 ft. 6 in., and the height of the old chapel wall was only 26 ft. Three windows were alleged to be obstructed. The light to the plaintiff's windows was an east light, which was a light important to traders.

His Lordship said that might be so if they were up very early in the mornings.

Mr. Jenkins said it might be necessary to keep out the south light, which might fade the goods, but the east light was mellow.

Mr. Rew, F.R.I.B.A., partner of Messrs. Rew and Macdonald, architects, of London, said the defendant's building seriously interfered with the light to three windows of the plaintiff's premises.

Mr. Edward Waters, J.P., of Messrs. Waters and Rawlence, auctioneers, said he considered that defendant's building made a difference in the rental value of plaintiff's shop of about £10 a year, and he thought £250 would be fair damages. Before the defendant erected his building the rental value of the plaintiff's premises was £100 a year.

Mr. J. W. L. King, manager for the plaintiff for the past five years, said since the defendant's building had gone up their building was considerably darker, and they now found it necessary to have two or three lights in the morning. There was not sufficient light for matching goods on the ground floor, and for this purpose it was necessary to go to the upper floors.

Mr. Holman Gregory, for the defence, submitted that no case had been made out of injury in respect of the ground floor and very little as to the first floor.

Mr. Michael Harding, architect, said he prepared the plans by which the chapel was altered by the defendant. The windows in question were in his mind when he prepared the plans. He had since made a careful inspection of the premises, and, in his opinion, the defendant's alteration had not appreciably affected the

lighting of the plaintiff's shop. The windows on the ground floor were used for display alone, so that the building did not affect the use of the plaintiff's shop. He was of opinion that the erection of the defendant's building had increased the value of the plaintiff's business.

Mr. Henry Barnes Hale, architect, of Queen Anne's Gate, London, said he did not think there was any ground for actionable damages in this case.

His Lordship: What do you think is "ground for actionable damages"?

Witness: I think that is left to the Judge.

Mr. Percival Currey, surveyor, of Norfolk Street, Strand, London, said the new building had not materially affected the business of the plaintiff, and he could not think that it had interfered with the letting or selling value of the property.

Mr. Holman Gregory submitted that no evidence of actual damage had been given, and this was not a case in which his Lordship could allocate damages. It was significant that no person had been called to prove the actual loss. The plaintiff himself did not say that he had suffered any loss or been placed at any inconvenience, except that he had been forced to use artificial light a little earlier than in former circumstances. He submitted that the defendant had paid into court (£50) more than would meet any possible damage, and asked for judgment in his favour.

Mr. Jenkins having replied,

His Lordship, giving judgment, said the plaintiff had as much right to claim to be entitled to the light for the display of goods in his windows as to be able to read from the other end of the room. Where a man was carrying on a business which required the display of goods in his windows, and therefore had to obstruct the light to some extent himself, there was all the more reason that he should have as much as possible. Bearing this in mind, and having heard the evidence, he placed the difference in the value of the house now and before the obstruction at £150. He thought that was a fair estimate, and he therefore gave judgment for damages for that amount to the plaintiff, with costs.

## Bricklayer's Claim Under the Workmen's Compensation Act.

*Renshall v. Spencer.*

January 15. Court of Appeal. Before the Master of the Rolls, Lord Justice Warrington, and Mr. Justice A. T. Lawrence.

This case was the appeal of the applicant, George Renshall, a bricklayer, of 98, Ratcliff Street, Oldham, from the refusal of Judge Spencer Hogg, sitting at Oldham County Court, to award him compensation under the provisions of the Workmen's Compensation Act as against the respondent, Mr. Nathan Spencer, a builder and contractor, of 181, Horsedegge Street, Oldham.

It appeared that Renshall, while working for the respondent in repairing a roof at a certain building in Docker Street, Oldham, on August 23, 1915, was struck in the right eye by a piece of slate which he was cutting, and the result was that the eye had to be operated upon, and Renshall was in consequence incapacitated from work until November 10, 1915. He then returned to work for the respondent, and worked for him until February 10, 1916, when he alleged that his eyes became so bad that he was unable to work any longer, and he accordingly claimed compensation under the Act.

Respondent's case was that Renshall had fully recovered from the effects of the

accident which occurred on August 23, 1915, when he returned to work on November 10, 1915, and that his present incapacity (if any) was not the result of the accident.

The matter was referred to a medical referee, and upon his report the learned County Court Judge made his award in favour of the employer, and from this decision the applicant now appealed.

At the conclusion of the argument on behalf of the applicant, and without calling upon counsel for the employer, his lordship dismissed the appeal.

## WILLIAM DE MORGAN AND THE MORRISES.

Miss May Morris has, in the "Times Literary Supplement" for January 25, a charmingly written memoir of her father's friend and her own, Mr. William de Morgan, who died a few days ago. Like Wm. Morris, De Morgan was an all-round art-craftsman as well as a man of letters. "One summer" (Miss Morris writes) "our expeditions took us into Cotswold country with the special object of looking for a suitable site for factory and workshops for the Morris and Co. business and the De Morgan pottery; and the two men very nearly fixed upon a village of entrancing beauty and fairly inaccessible. In early days our friend, like my father, had intended to be a painter, but soon found that his bent was towards the handicrafts and invention. It is specially interesting to note that when he was a lad of eighteen his father, the distinguished mathematician [Augustus De Morgan], told him that if he would take to reading he thought he had decided literary faculties which might be developed. But the lad himself would hear of nothing but art, and, indeed, never wrote a page of original composition until he began his career as writer late in life. He designed and made a good deal of stained glass at one time, but when we knew him it was as a potter and inventor of the most beautiful lustre-ware; and these things were exhibited at the first Arts and Crafts Exhibition, while they were always a familiar decoration of the Morris and Co. showrooms in Oxford Street.

"When the Morris family visited the De Morgans in Chelsea news sometimes came of a specially successful kiln, and the company would adjourn to Orange House, further up the street, to admire a pot with some new depth of red or gleam of silver on it.

"But the factory had to be found, and at last Mr. De Morgan built at Merton Abbey, not far from our works. And here, when the women-kind had a picnic-day at Merton Abbey Works, they sometimes went on to the potteries and watched whatever was going on. Pleasant days—so full of the satisfaction in the making of things, and our men-folk eager and enjoying each other's companionship! . . .

"Just as my father used to say that the decoration of London houses should be such as you could turn the garden-hose on to clean, so William De Morgan was anxious that tiles should be used for the outside of houses, and he thought that the house in Addison Gardens designed by his friend Mr. Halsey Ricardo was a great success. The interior contains some of De Morgan's finest wall-tiles. The staircase at Leighton House is thus decorated, and in the Arab Court some of the tiles Sir Frederick Leighton brought from Damascus, not being enough for their purpose, were



matched in the De Morgan ware. Those supplied were so similar in colour and texture that Sir Frederick declared that only a certain peculiarity in the original tiles could identify them. It may interest a student of the De Morgan ware to know that some of the beasts and birds in the designs were done by another hand.

"Of William De Morgan's inventive faculties I have said little, not being qualified to speak of such matters. He was constantly experimenting for his work, of course, but also made several useful inventions. Two fine novels are left unfinished."

## FOR KING AND COUNTRY.

The R.I.B.A. Record of Honour, thirty-ninth list, is as follows:

### *Fallen in the War.*

Bennett, Lieut. James, Royal Engineers (A.). Killed in action on November 28. Sturgeon, Captain Robert Victor (A.). At first stated to be missing; War Office now report that they are obliged to consider that he was killed on March 10 last.

Durrant, Captain Arthur Michael, Royal Engineers (A.). Killed in action.

### *Severely Wounded and Missing.*

Honan, Captain Matthew, South Lancashire Regiment (A.), of 36, Dale Street, Liverpool. Severely wounded and reported missing in the recent fighting.

Captain Honan obtained a commission in the South Lancashire Regiment in 1914 and was promoted captain in five months. He went out to Gallipoli with the 29th Division, being attached to the Lancashire Fusiliers, and was mentioned in despatches "for great coolness, initiative, and conspicuous bravery in action." He was transferred into the Regular Army in October, 1915, joining the South Lancashire Regiment, and went to the Front in France early in September.

### *Wounded.*

McLean, Lieut. Arthur John, Machine Gun Corps (A.). Severely wounded on October 12. Progressing favourably.

Lieut. McLean was seconded from the South Lancashire Regiment to the Machine Gun Corps and was later promoted full lieutenant. He has lost two brothers in the War: 2nd Lieut. Angus McLean, Wiltshire Regiment, killed at Hooge, June 23, 1915, and 2nd Lieut. Raymond McLean, Seaforth's, killed at Beaumont Hamel, November 13, 1916.

### *Awards for Distinguished Service.*

Hubback, Brigadier-General Arthur (F.) had the honour of being received by the King at Buckingham Palace on the 30th ult., and was invested by His Majesty with the insignia of Companion of the Most Distinguished Order of St. Michael and St. George.

Douglas, Major J. W., Northumbrian R.E., member of the Northern A.A., awarded the D.S.O. and the Serbian Order of the White Eagle.

Mauchlin, Captain R., member of the Northern A.A., awarded the Military Cross.

Waterhouse, Captain Michael, Notts Yeomanry (Sherwood Rangers), Notts and Derby Mounted Brigade, awarded the Military Cross. Captain Waterhouse is the son of Mr. Paul Waterhouse (F.) and grandson of the late Alfred Waterhouse, R.A.

Webb, Captain Maurice, Royal Engineers, awarded the Military Cross. Captain

Webb is the son of Sir Aston Webb, K.C.V.O., C.B., R.A. (F.).

Grellier, Captain Cecil, Hampshire Regiment (Student), nephew of Mr. William Grellier (F.), has been awarded the Serbian Order of the White Eagle. He has also been recommended by the British Command for gallant conduct in action.

Captain Grellier, in command of a company, was left with fifty men to hold, with the Dublins, a hill on the borders of Serbia and Bulgaria, whilst the remainder of the battalion retired to a position in the rear. Shelled by the enemy's guns and practically without food or water for more than forty-eight hours, they held the position and joined the battalion on December 8 or 9 without having suffered very serious losses.

### *Mentioned in Despatches.*

Craik, Captain David McLeod, Royal Engineers (F.).  
Durrant, The late Captain Arthur Michael, Royal Engineers, M.C. (A.).

### *Serving with the Forces.*

The following is the thirty-ninth list of Members, Licentiates, and Students R.I.B.A. serving with the Forces, the total to date being 69 Fellows, 506 Associates, 307 Licentiates, and 291 Students:

#### FELLOW.

Gill, Charles Lovett, O.T.C., Artists' Rifles.

#### ASSOCIATES.

Hooker, W., 2nd Lieut. R.E.  
Wright, E.L., Army Service Corps (M.T.).  
Perkins, Cecil H., 2nd Lieut., R.E.  
Metcalfe, C. B., Cheshire Regiment.  
Fowell, J. C., Sub-Lieut., R.N.V.R.  
Welch, H. A., R.N.A.S.

#### LICENTIATES.

Ardley, C. E., R.N.A.S.  
Fermaud, Edmund Auguste, Essex Regiment.  
Porter, Bernard A., 2nd Lieut. (on probation), R.G.A.

#### STUDENTS.

McNichol, J., 2nd Lieut., R.G.A.  
Gregory, Hubert, R.F.A.  
Dartnall, J. A., R.E. Cadet Unit.  
Ardley, C. E., R.N.A.S.

### *Promotions, etc.*

Hill, Captain D., member of the Northern A.A., has been promoted Brigade Major.  
McNichol, J. (Student), to 2nd Lieut., R.G.A.  
Crone, H. C. (A.), Captain R.E.  
Williams, L. E. (A.), from Artists' Rifles to 2nd Lieut., R.E.  
Smithers, Lieut. Alec. (A.), to Captain, R.A.  
Hunter, J. Douglas (Licentiate), to 2nd Lieut., R.G.A.  
Barnard, Captain L. W. (F.), transferred to Artizan Works Co., R.E.

## OBITUARY.

*Mr. E. R. Robson, F.S.A., F.S.I., F.R.I.B.A.*

Mr. Edward Robert Robson has died, after a short illness, at Blackheath, at the age of eighty-one years. He was a Fellow of the Royal Institute of British Architects, of the Surveyors' Institution, and of the Society of Antiquaries, and was architect in charge of Durham Cathedral, Surveyor to the Corporation of Liverpool, and subsequently Architect to the London School Board. He became an Associate of the R.I.B.A. in 1860, and a Fellow in 1864.

*Mr. Edward Timmins.*

The death has taken place, at the age of seventy-nine years, of Mr. Edward Timmins, of Iona House, Summer Hill, Hales Owen, who for nearly half a century was actively identified with the Black Country building trade. Mr. Timmins was in the Nine Locks Colliery, Brierley Hill, when it was flooded, and had a narrow escape from death, being the last man to be brought up the pit, the water being up to his chest when he was rescued; and he also had a narrow escape from death when he was down the Tump Colliery, Black Heath, when it fired. Later, at considerable risk to his life, he entered a burning building at Hales Owen and fetched out a quantity of gunpowder which was stored there, thus preventing a serious explosion. At various times he met with other serious accidents, having bones in his arms and legs broken.

*Mr. H. C. Henly.*

Mr. Henry Crook Henly, architect, who has died at Avebury, at the age of sixty-three, was the second son of the late Alderman Robert Henly, who was thrice Mayor of Calne. Mr. H. C. Henly was articled to Mr. Stert, of Warminster. His son Lionel was farming in Canada when the war broke out, and at once joined the Canadian forces. After training he was sent to France, where he was killed in action.

*Mr. William Edwards.*

Councillor William Edwards, an ex-magistrate of Aberdeen, was a pioneer of the granite trade. He was a self-made man of the best type, and he rose from the lowest rungs of his business as a granite worker to become one of the largest manufacturing granite merchants in Aberdeen. After spending several years at his trade in America, Mr. Edwards returned to Aberdeen, and resumed work with Mr. Boddie, afterwards commencing business on his own account. In later years he was joined by his eldest son William, the principal branch of the industry engaged in being monumental work, and the firm is noted for excellent workmanship. Altogether, Mr. Edwards was in business for about forty years. He occupied the magisterial bench for two terms, and was a member of the St. Nicholas Lodge of Freemasons. He was seventy-one years of age.

*Mr. John Byars Hay.*

Mr. John Byars Hay, builder, who has died at Windsor Terrace, Dundee, was at an early age apprenticed to the mason trade, and on becoming a journeyman, about fifty years ago, went to Dundee, entering the service of Messrs. Keith, Connel, and Co., then one of the chief building firms in the city. Three years later that firm was dissolved, and Mr. Hay entered into partnership with Mr. White, one of its members. For five years the firm continued, but owing to the ill-health of Mr. White the partnership was then dissolved, and Mr. Hay assumed his brother Charles as partner. The new firm had a long and successful career, and erected many important buildings both in Dundee and in other large towns. One of its earliest efforts was St. Matthew's Parish Church in Ferry Road, and it also built the Public Slaughter-House, an extensive addition to Murthly Asylum, churches and private houses in Edinburgh, the Students' Union at St. Andrews, the hall for women students there, and the restoration of a portion of Trinity College, Glenalmond. The largest public building erected by the firm in Dundee was the new Post Office, which cost over £20,000.





## WAR BUILDINGS SECTION

### AN ARMOURY FOR MOUNTED TROOPS.

SO persistent has trench warfare been since the early days of the present conflict that we are apt to overlook the needs of mounted troops. But at any time, if the trench systems were broken through, we should see again the sweeping power of man and horse. Apart, however, from the actual facts of the modern battlefield, we have to make provision at home for large buildings where mounted troops can be housed and trained, and in this connection it is of value and interest to show the accompanying illustrations of a large armoury.

The building occupies a site convenient to the city near which it has been erected, and ample provision has been made for direct transportation. The main lines of a railway pass close to the rear of the building, and it is the intention to construct a branch line from the railway that runs along one side of the training field and under the rear stable. This line will bring hay and fodder supplies directly into the stables, and by means of a loading platform at the level of the field mobilisation of troops will be greatly facilitated.

The building accommodates a squadron of cavalry, a battery of field artillery, signal, ambulance, and field hospital corps, and general headquarters. The quarters for the men are grouped on two sides of the main riding hall, which is 175 ft. by 300 ft. A view of it is shown on this page. At the rear of the main riding hall and opening directly into it is a secondary riding hall 100 ft. by 200 ft., and on one side of this hall are the stables and quarters for the horses. (See plan on page 63.)

The mounting corridor in the stables opens directly into both riding halls. On the east side of the main riding hall are the gun sheds for the field artillery, opening on the opposite side on to a broad terrace, from which point the guns can be wheeled by hand on to the loading platform for entraining, or can be taken mounted to the field for drill.

The stables were planned in small units of forty-four horses each, to prevent the

too rapid spread of contagion, and are extremely light and airy.

Indoor ranges are situated in the sub-basement. The rifle ranges comprise five targets each. The revolver ranges are open the entire length, contain three disappearing targets similar to those in use on outdoor ranges, and permit of a full 75 yd. target practice. The lights are protected by concrete lugs and the whole length of the range is enclosed by concrete walls.

The recreation rooms are grouped in the front part of the building, directly below the main entrance, and consist of billiard-room, skittle alleys, and mess hall.

Storage rooms for all sections are placed under the terrace at the level of the training field on the east side of the building, and are so arranged that two transport wagons may be kept in each storage room,

and the floor of the wagons is at the same level as the storage.

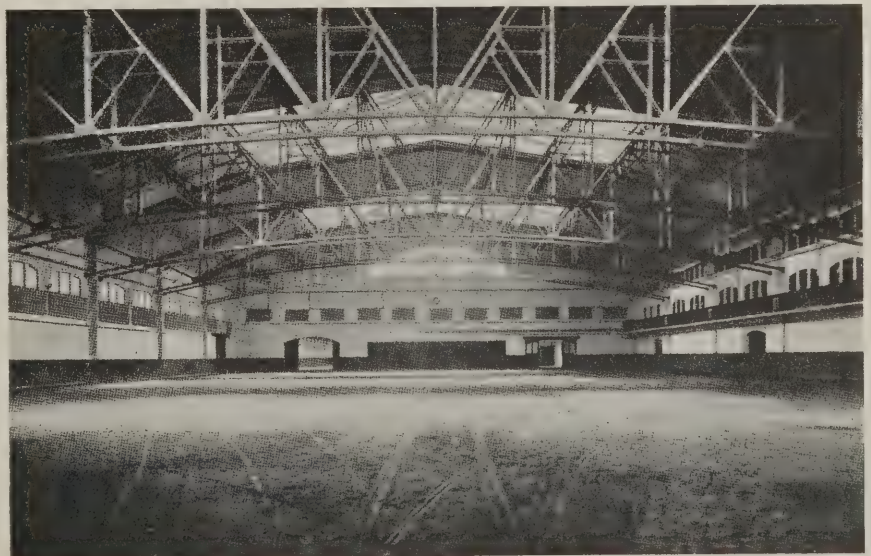
The main entrance to the building is over a bridge into an ample lobby, leading out of which are two main corridors from which open the balconies of the main riding hall.

The signal corps is accommodated in the tower, where there is a wireless installation.

The exterior of the building is of red brick with stone dressings, and the construction is fire-resisting throughout, except the roofs of the riding halls, which are of timber carried on steel trusses.

The basement and ground floor are of flat slab construction, with two-way reinforcements, and the upper floors are of beam and slab reinforced concrete, carried on steel girder beams spanning from wall to wall.

There are two rather interesting items



ARMOURY FOR MOUNTED TROOPS: LARGE RIDING HALL.





Front View.



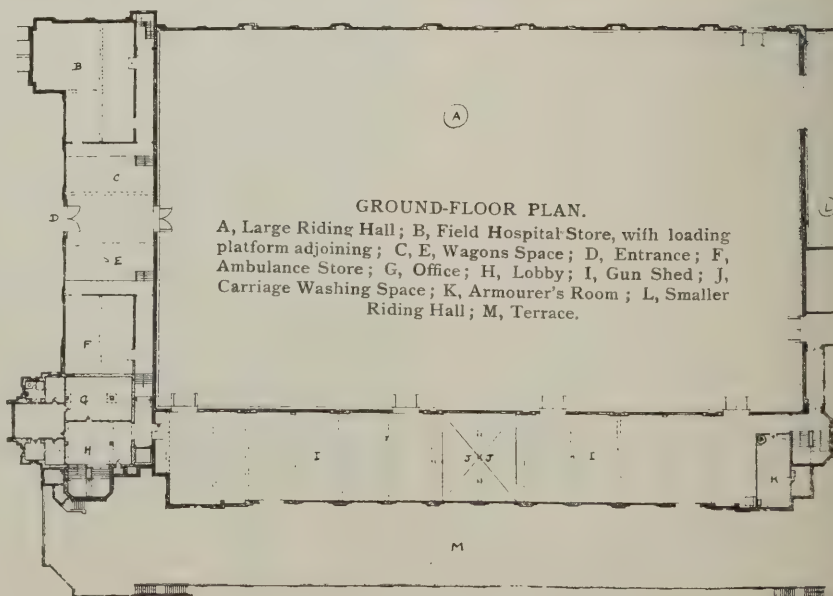
Side View.

## ARMOURY FOR MOUNTED TROOPS. JAMES E. McLAUGHLIN. ARCHITECT.

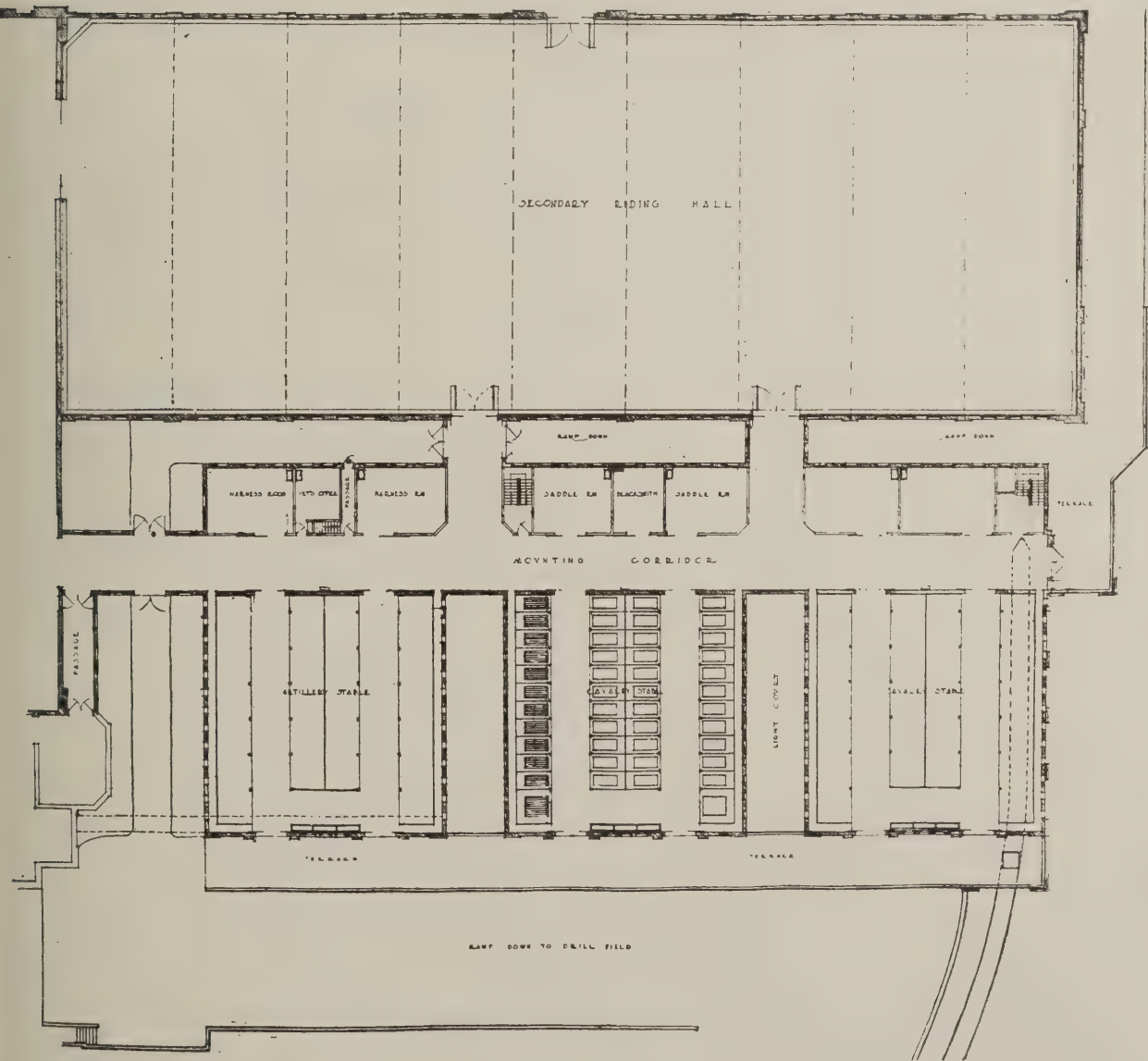
of construction in reinforced concrete work: The main east wall of the building, rising from the terrace level, is carried out over the flat slab on the base course, which is of concrete and reinforced for cantilever action. The balcony round the main riding hall is a continuation of the ground-floor slab, and juts out over the wall of the riding hall as a cantilever. It presents a perfectly smooth appearance on its underside, and is only 4 in. thick at the outer edge.

The bridge to the street is constructed of two segmental reinforced concrete arches 16 in. thick, and carries a deck slab approximately 9 in. thick.

It is interesting to note that the building was so planned to suit the level of the site that no extensive excavation was necessary. During recent years increased attention has been given to the housing of cavalry; and Mr. McLaughlin's solution of the problem is in many respects novel and ingenious.







ARMOURY FOR MOUNTED TROOPS: STABLES BUILDING.  
JAMES E. McLAUGHLIN, ARCHITECT.

## A MOTOR ENGINEERING WORKS.

WE illustrate this week a fine example of a modern engineering works, about to be erected for Messrs. Tilling-Stevens, Ltd., motor engineers. Plans and cross-section are shown on the accompanying pages, and the elevation is given on the centre plate.

The construction is on the Kahn system of reinforced concrete, which lends itself admirably to the requirements of buildings of this nature, and in studying the design one becomes convinced that an excellent modern rendering is made possible by these means. This building is frankly utilitarian, but by the straightforward expression of its main construction it gains an architectural quality which is entirely absent in the type of factory building which has hitherto been common—i.e., buildings whose fronts present a scheme of applied architecture of "Renaissance" character, made up of divers ill-assorted elements and lacking all sense of proportion.

The building which we now illustrate is of a far different and far better character, and does much credit to the architects (Messrs. Wallis, Gilbert and Partners, of Westminster) in referring to whom we may mention that the senior partner is Mr. T. Wallis, formerly associated with Mr. Bowden in the well-known firm of "Wallis and Bowden."

In planning the building special care has been taken to obtain a maximum of light, and the arrangement of the floors is such that the process of manufacture may be carried on methodically throughout. Particular attention has been given to the effective placing of machines, and

provision made for the proper fixing of shafting. Lifts are provided, one for receiving and rough stores, and one for finished articles.

In addition to excellent lighting, the up-to-date character of the works is seen also in the conveniences provided for the workpeople. There is ample lavatory accommodation on every floor, easy of access, and in such a position that proper supervision can be obtained; and on the fourth floor a mess-room and a staff dining-room are provided, with a service room between them, communicating by lifts with a kitchen on the floor above.

The following is a brief description of the accommodation:

**Ground Floor:** At present there is an existing assembly shop, and the new buildings together with the future extension have been considered as a whole. On this floor are the receiving rooms, the factory offices, a large assembling shop, testing room, first-aid ward and despatch, also the garage, boiler house, coal bunkers, and forge, etc.

**First Floor:** Rough stores, machine shop, appropriated stores, and offices.

**Second Floor:** Partial assembly shop, appropriated stores, rough stores, and offices.

**Third Floor:** Machine shop, appropriated stores, and offices.

**Fourth Floor:** Machine shop, appropriated stores, and rough stores. Also mess rooms, already referred to.

The heating is on the low-pressure hot-water system. The cost of the building works out at the very low figure of 6d. per foot cube, including all the various

trades, and in view of the cost of labour and materials at the present time this clearly shows that the architects have been economical in their planning and have taken every care in dealing with the work of sub-contractors.

### Factory Lighting.

At the present moment it will be particularly useful to summarise the general recommendations issued by the Departmental Committee on Lighting in Factories and Workshops:—

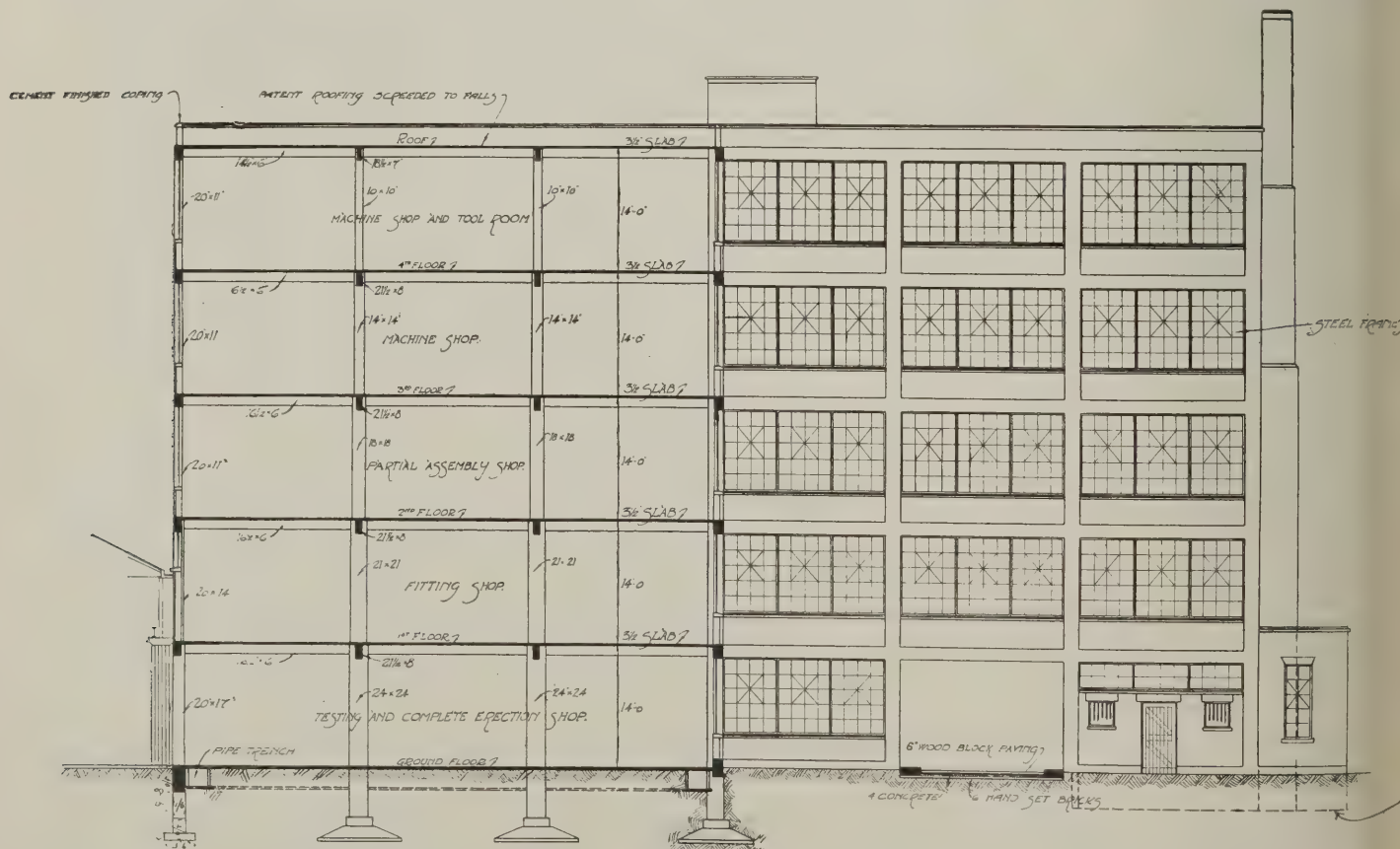
(1) That there should be statutory provision—(a) requiring adequate and suitable lighting in general terms in every part of a factory or workshop, and (b) giving power to the Secretary of State to make orders defining adequate and suitable illumination for factories and workshops.

(2) Over the "working areas" of workrooms the illumination, measured on a horizontal plane at floor level, shall not be less than 0.25 foot-candle.

(3) In all parts of foundries in which work is carried on or over which any person is ordinarily liable to pass, the illumination, measured on a horizontal plane at floor level, shall not be less than 0.1 foot-candle.

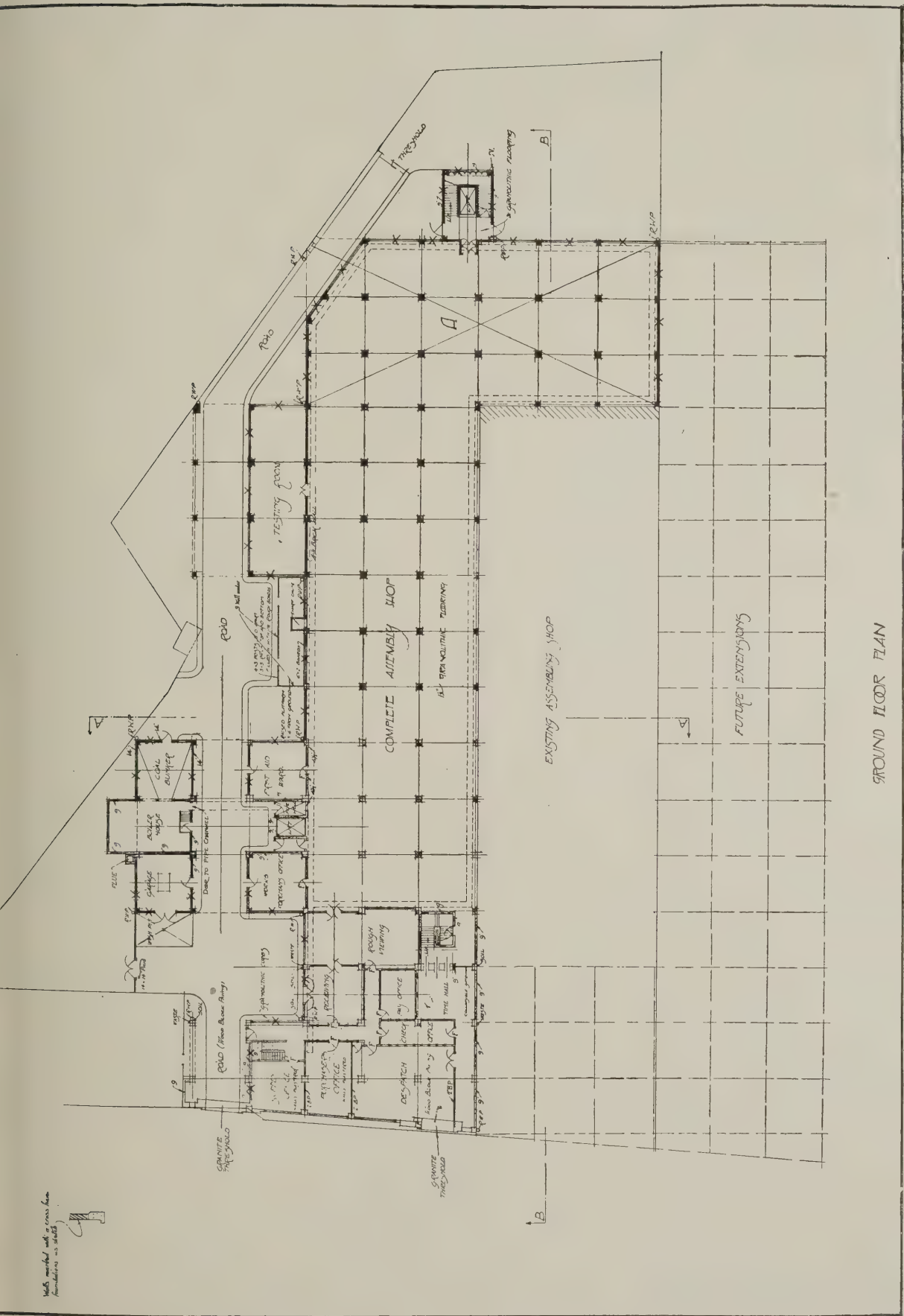
(4) In all parts of factories and workshops (not included under recommendation (2)), over which persons employed are liable to pass, the illumination, measured on a horizontal plane at floor level, shall not be less than 0.1 foot-candle.

(5) In all open places the illumination on a horizontal plane at ground level shall not be less than 0.05 foot-candle.

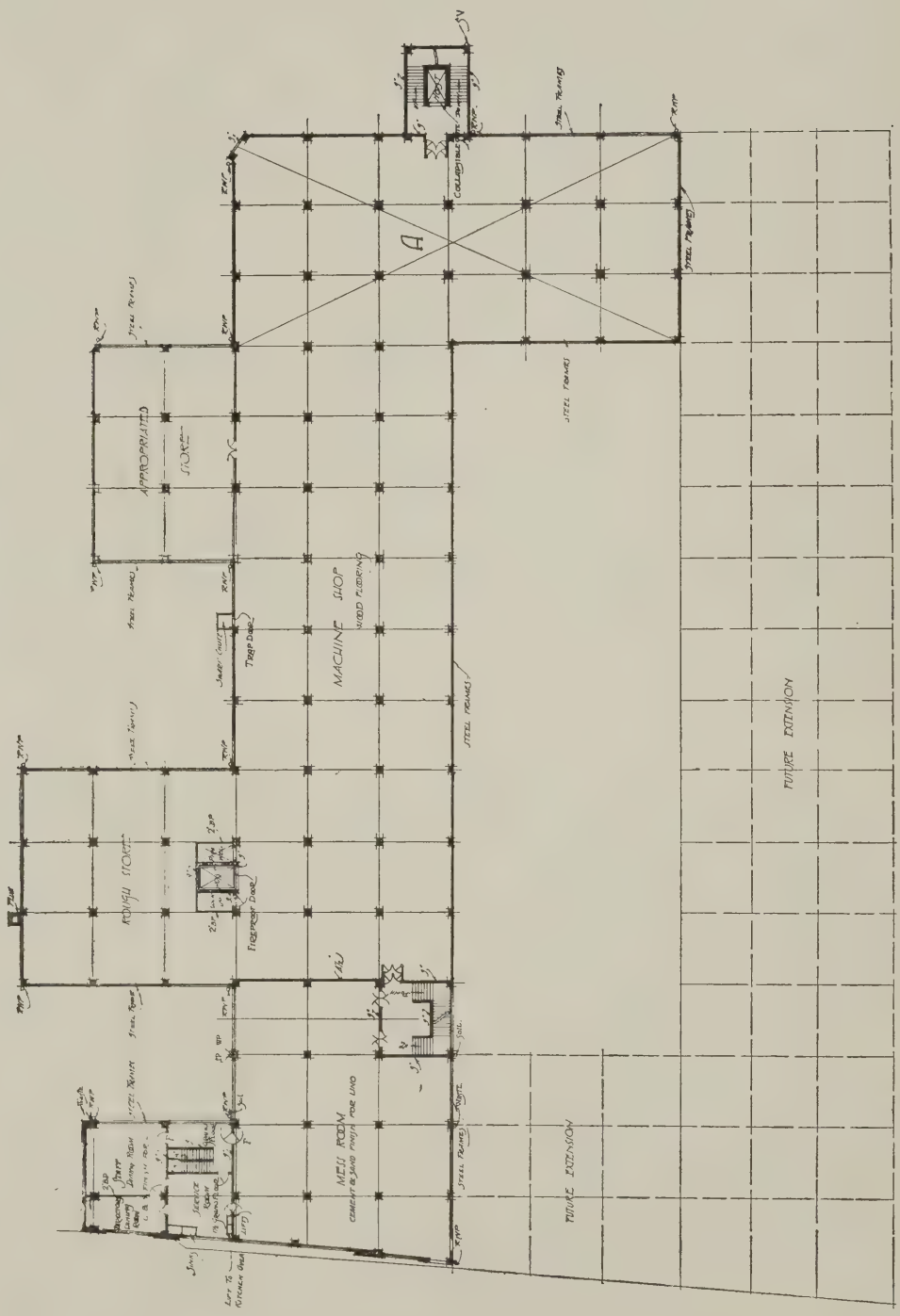


SECTION A-A





MOTOR WORKS FOR TILLING-STEVENS, LTD. WALLIS, GILBERT AND PARTNERS, ARCHITECTS.  
TRUSSED CONCRETE STEEL CO., LTD., CONSULTING ENGINEERS.



FOURTH FLOOR PLAN

MOTOR WORKS FOR TILLING-STEVENS, LTD. WALLIS, GILBERT AND PARTNERS, ARCHITECTS.  
TRUSSED CONCRETE STEEL CO., LTD., CONSULTING ENGINEERS.



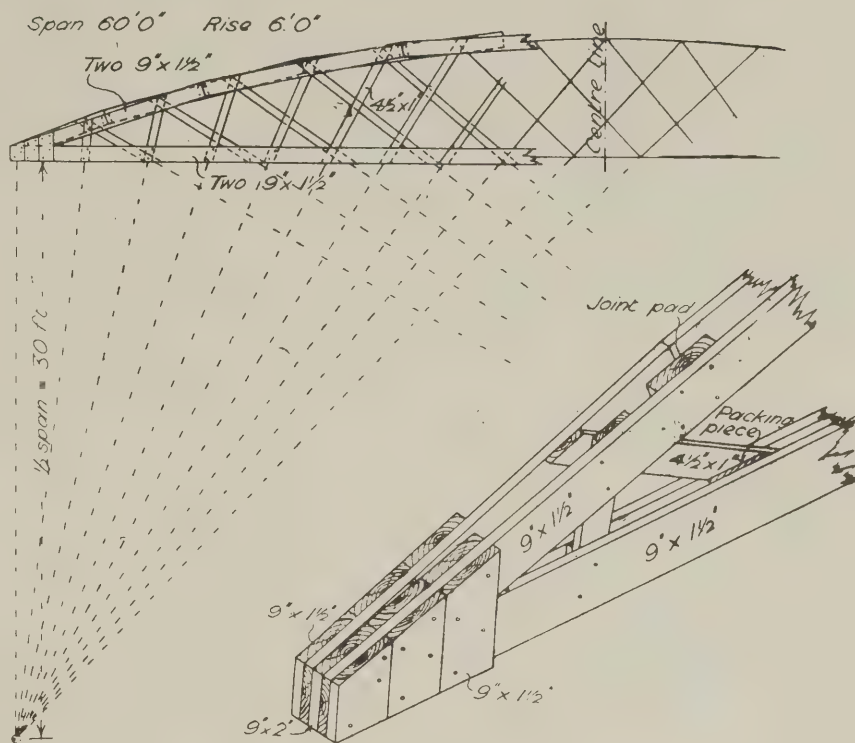
## WOOD ROOFS FOR WAR-TIME BUILDINGS.

BY H. V. MILNES EMERSON, A.R.I.B.A.

THE War has been responsible for many revolutions in the industries of this country, and among the changes that have been brought about is that concerning the construction of buildings. The existing factories being totally inadequate to cope with the enormous output demanded, means had to be found to supplement them in a quick and efficient manner. It was realised that the usual methods of building with incombustible materials were too slow and costly, and light steel buildings, although quickly erected and durable, could not be obtained owing to the demand for the material in other directions. It was, perhaps, natural therefore, that attention should be turned to timber for supplying the bulk of the material for the erection of factory and other buildings. There is no reason why a timber building constructed of timber should not, with due care and attention, admirably fulfil its purpose for the present.

*Belfast Roof Truss.*

A generation ago it was the general impression that a roof constructed of timber was not capable of spanning more than about 60 ft. of space, and that only the use of large timbers. It was left to Messrs. Andersons, of Belfast, to prove that a roof truss could be constructed out of practically 1 in. or 1½ in. flooring timbers, and be capable of carrying a load of a span of 100 feet or more with safety, the boards being put together without any elaborate joints, and fastened with nails only. This truss is commonly known as the "Belfast truss," and is extensively used in the numerous factories that have been and are being erected in



BELFAST ROOF TRUSS.

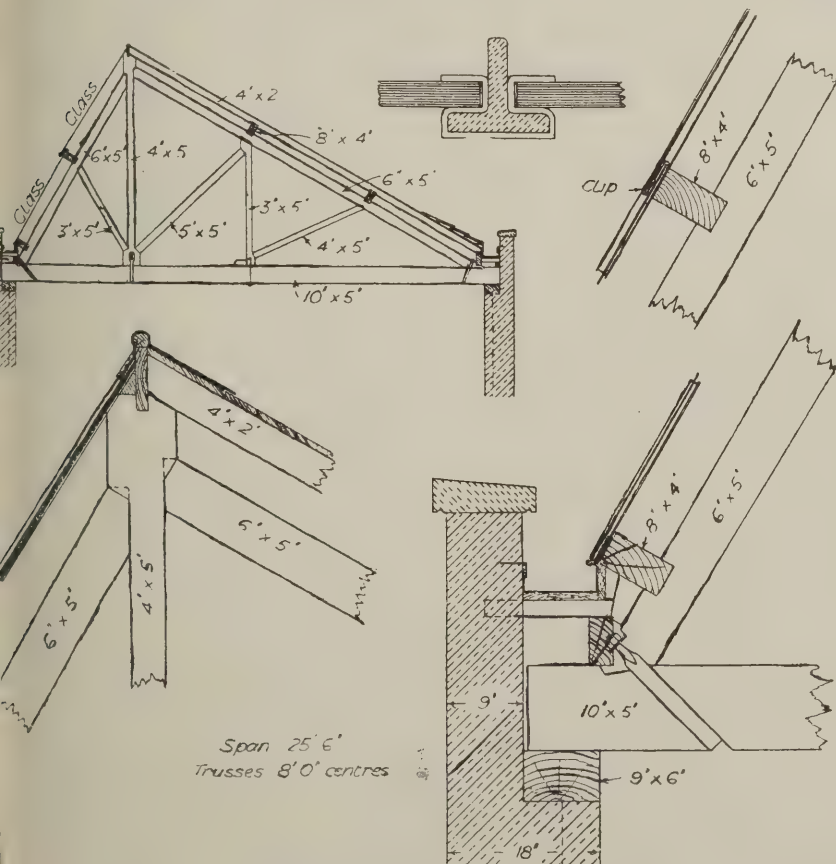
this country and elsewhere to meet the requirements that the War has demanded.

The Belfast truss is a bow-shaped latticed frame. The example illustrated on this page is suitable for a span of 60 feet. The rise of the truss is usually about a

tenth of the span; in this case it is 6 feet. The slope of the lattice or bracing is governed by the radial points. These points are obtained in the manner shown by the illustration on the next page. Another method is to draw a line from the apex of the bow on either side of the centre line at an angle of 45 degrees, and produce these lines until each intersects a perpendicular dropped from the end of the truss. The bow can be constructed of one or more boards on each side, cut to shape. The use of two boards breaks the joints better, but entails more labour in shaping the pieces. The strings are usually composed of one board on each side in long lengths. The lattice boards are fixed as shown, and all voids are filled and made solid with packing pieces as required. The lattice can be carried through to form a support for the purlins, which in turn are covered with ¾ in. or 1 in. boarding and felt. The ends of the truss are strengthened by means of a number of short boards nailed to the bow and string pieces.

There are various ways of connecting the truss to the wall framing, but whatever form is adopted it must be strong enough to prevent the wind lifting the roof off. The bracing illustrated has the advantage of not only tying the truss down, but prevents the building from swaying in a high wind.

Corrugated iron could be used as a covering, either curved or straight, the latter fixed to the purlins, which are made level in series. The purlins can be raised on blocks as required and extra cleats, if necessary, obtained by nailing short boards to the sides of the bow. The central portion can be provided with louvres and top lighting. The louvres would be fixed in the framing, the latter being formed with head, sill and uprights, and the lower louvre board arranged to project well over



NORTH LIGHT ROOF TRUSS.





## THE DESIGN AND CONSTRUCTION OF INDUSTRIAL PREMISES.

BY A. ALBAN H. SCOTT (VICE-PRESIDENT, SOCIETY OF ARCHITECTS).

*(Concluded from p. 52, No. 1151.)*

N connection with the matter of submitting plans to local authorities, I may mention a recent case where plans for a certain factory were passed, the Surveyor going away. Shortly afterwards, further plans were submitted, showing the factory doubled in size, and these were also passed. A little later still, a further set of plans was submitted showing another extension, the second extension being incidentally coloured on this set. Much to my astonishment the last extension was approved, and also the second extension, the Council stating that although the second had been passed they had the right to reconsider, as the second portion was coloured on the third application, and therefore they could treat it as a new application. Meanwhile a curious position had arisen. The first portion was nearly finished, the second portion was well towards completion, and the foundations for the third portion were in! The building generally would have passed the London Building Act, and yet we had verbal notice to pull it down! I made an appointment to meet the Surveyor, and whilst waiting for him, again looked over some of the by-laws, and found a most useful clause which, according to my reading, gave the Surveyor power to pass practically any building—provided he was satisfied as to its stability. I do not know whether he was convinced, but the plans were eventually passed, and the building is now as it was originally designed.

*Thickness of Walls.*

If it were not necessary to have a thickness of at least 9 in. to keep the weather out (more or less), greater developments could take place regarding walls, particularly those of one-storey buildings. About three years ago an internal wall 18 ft. long and 25 ft. high was erected in brickwork  $4\frac{1}{2}$  in. thick, reinforced in every course. It is in perfect condition to-day, and is actually carrying a 3 h.p.-motor attached to the wall at a height of about 15 ft. At present there is not a better material for walling than brickwork, and, in the majority of cases, no material is cheaper for this purpose.

*Windows.*

Windows in walls nearly always prove an expensive item for upkeep. In one large works we have now standardised our windows, the size of the glass forming the unit being 1 ft. 4 in. by 2 ft. Any part of the whole can be opened, and there is nothing to get out of order. It is found that with this window there is only a low cost for repairs.

Where a large area of wall glazing is required, it is not necessary to have the whole in the form of sashes, and in such a case vertical glazing is adopted, formed of lead-covered steel bars about 24 in. apart, glazed with  $\frac{1}{4}$  in. rough-cast glass. Similar glazing is used for the roof light—3 ft. 6 in. by 3 ft. 6 in., in which case it is desirable to have the wall windows so as to give a little cheerfulness to the shop.

Glazing bars made of reinforced concrete have been used, and generally have proved satisfactory.

*Heating and Ventilating.*

The heating and ventilating of industrial premises must be considered together,

for it is but waste of energy to instal a heating plant and then to think of the ventilation.

Speaking generally, a low pressure hot water accelerated system is most satisfactory, and if this is combined with efficient ventilation, and careful attention is given to details—such as hot-water pipes under all roof lights, and fresh air intakes, etc., so arranged that the incoming air is warmed—thoroughly satisfactory and effective results can be obtained.

The method of heating certain buildings by hot-water pipes placed over the workers' heads about 8 ft. to 9 ft. above floor level is, in the opinion of the writer, the worst and most undesirable form of heating possible.

In all forms of heating it is essential that the feet and lower part of the body should be kept warm, and if this condition is obtained generally the whole body will be warm and active; if, however, the upper part is warm, and the lower part is cold, dullness and inactivity follow.

With a hot-air system, the heated air should be discharged about 12 in. above the floor. Gratings should be arranged so that no dust can accumulate in the ducts, and thus be discharged with the air, and it is better to have a larger discharge of hot air at a lower temperature than a smaller quantity at a higher temperature.

For ordinary industrial premises the air should be changed three to five times per hour. But this entirely depends upon the work that is carried on. In one case where there are very special conditions, we change the air about twenty times per hour. The temperature required in factory premises also varies according to the nature of the work carried on, but a good average is 57 deg. Fahr.

Where only a partial system of ventilation can be installed, it is better to deliver fresh air into the building and to let the outlet take care of itself, rather than to extract the air and leave fresh air to chance.

*Lighting.*

The artificial lighting of premises must be considered for each particular department, but in no case should the naked light be in a direct line with the workers' eyes. Indirect lighting should be used wherever possible. Half-watt lamps are now used with extraordinarily good results, and if these are adopted for general lighting and are properly placed, very little local lighting will be required.

*Dilapidations.*

Dilapidations do not strictly come under discussion in the present paper, but in arranging leases it should be clearly understood that the tenant has the right to move the whole of his plant, the premises being made good where the plant is so removed.

Dilapidations in industrial premises may be a serious matter for the landlord or the tenant, and the interests of both parties require to be carefully guarded by their respective architects.

It is most desirable that an annual inspection of the whole of the buildings should be made by the architect, and a report submitted to the owners, exactly as an auditor does each year with his accounts.

*Assessment of Industrial Buildings.*

In designing works some regard must be had to the future assessment for ratable value. Some clients ask, when considering sites, whether certain districts rate machinery. It might be broadly stated that no districts rate machinery, but all districts should take machinery into account as enhancing the value of the hereditament on which it is placed. Much valuable time and money have been spent in law cases in order to determine the proper way to take machinery "into account." Some overseers ask for a list of machinery and the cost of same, and others seem to be at a complete loss in dealing with machinery. It would be most useful if the recommendations from the Royal Commissioners on Local Taxation (May, 1901) were made law, for the effect of them is as follows:—"That in estimating the ratable value of any hereditament occupied for trade, business, or manufacturing purposes, there shall be excluded from the assessment any increased value arising from machines, tools or appliances which are not fixed, or are only fixed that they can be removed from their place without necessitating the removal of any part of the hereditament. But the value of any machinery, machine, or plant used in or on the hereditament for producing or transmitting first motive power, or for heating or lighting the hereditament, should be included."\*

It often happens that firms who erect good and lofty buildings giving much better conditions for their employees are penalised in the matter of assessment, owing to the lack of a sense of proportion in the persons who carry out the valuing; for instance, the ratable value is sure to be put much higher on a building with lofty ceilings, and where the walls are nicely painted with a light colour and the place is kept clean, than on a building of the same floor area but of the usual low height, and indifferently kept. The old-fashioned way of taking the cubic foot as the unit for value is, I am afraid, partly the reason for this. The foot super of actual effective floor space is really the only proper unit—both as to use and cost. As an example, let me take a representative building, 300 ft. long, 70 ft. wide, and 18 ft. high to the roof tie. The cost of this building was about £5,500, but if the height were reduced to 12 ft., the deduction would only be about £200, the usefulness of the building being the same; therefore the ratable value should not be greater for the 18-ft. building than for the 12-ft. building.

I submit that it is more reasonable to put a high assessment on a set of cramped dirty w.c.s. not fit for use than upon a suite of w.c.s., lavatory basins, cloak-rooms and other conveniences provided for the employees, and in a building of such a size and height that they can be kept properly clean and sweet.

It is necessary for overseers to take careful account of all points before arriving at a value for the assessment of industrial buildings. Often in a building costing many thousands of pounds, with the judicious spending of a few extra hundreds, the general effect can be greatly improved and the works made more cheer-

\* See Ryde on "Rating."



ful, but it is not encouraging if the ratable value is unduly increased thereby.

It is submitted that the assessment on industrial buildings should be arranged on a sliding scale in inverse ratio to the consideration given to the health and conditions of the employees in the design and upkeep of the building, thus encouraging those employers (who have hitherto ignored this question) to pay more attention to this essential part of their business.

[Correction: In the list of prices for floors given in the first part of this article on page 52 of last week's issue a mistake occurs. "Wood blocks  $\frac{3}{4}$  in. creosoted" should read "Wood blocks  $\frac{3}{4}$  in. creosoted."] 

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## REINFORCED CONCRETE AS A WAR-TIME BUILDING MATERIAL.

BY H. R. STROYER, M.Inst.C.E.  
(COPENHAGEN).

The general advantages of reinforced concrete as compared with other building materials have long been realised by architects and engineers, and there is hardly any need to enumerate them in this place. The adaptability of reinforced concrete is best shown by the fact that it is employed in nearly every branch of engineering, and this in spite of the drawbacks that have been alleged against it. The only disadvantage attending its use as a building material, or the only one which so far has been substantiated in certain cases, is the loss of time in waiting for the concrete to set. In the greatest number of cases this loss of time is compensated by numerous advantages, and is most frequently overcome by special arrangements of the building programme; but there have been instances where certain parts of the structure were required to be ready for use immediately after erection, and the great advantages of reinforced concrete have had to be sacrificed in order to gain a week's time.

All up-to-date architects and engineers are agreed upon the durability, strength, cheapness, and adaptability of reinforced concrete. In ordinary times the great points in favour of its use as a building material were the ease with which the composite materials, steel, cement, and ballast were obtained. This advantage is even more pronounced at the present time, when sectional steel is very difficult to obtain, and timber is almost worth its weight in gold. The quantity of steel required for reinforcement is only a fraction of what would be necessary for a similar construction in sectional steel; and the other materials used in reinforced concrete—viz., cement and ballast—are still obtainable at reasonable prices and deliveries.

From a monetary point of view reinforced concrete is, at present prices, cheaper than any other form of construction, including timber and brick or stone. When, in addition, it is remembered that it is fire-, weather-, and water-proof, it will be seen that it possesses all the good points of an ideal building material for War contracts, in which strength, cost, and resistance to fire, water, and weather are essential qualities.

The only set-back to its use as a building material at the present time is the above-mentioned loss of time for setting. As long as concrete is poured into moulds *in situ* this handicap will obtain; and the fact that, generally speaking, all the site moulds have to be carried by a more or less elaborate system of supports and struts and rakers increases the cost of the

finished reinforced concrete structure by an amount that is by no means negligible. There is a considerable field for improvement in respect of the present system of executing reinforced concrete by means of site moulds; and the fact that the material has, in spite of this, won for itself a very prominent position, and has come to stay, is no reason why it should be allowed to rest on its laurels, and no attempts be made to improve it by reducing the time of execution and at the same time the cost.

Nearly all architects and engineers have been brought face to face with this drawback, and it has been the endeavour of both consultants and contractors to overcome the difficulty in a sound and practical way. The principal idea underlying all attempts in this direction is to provide means for using reinforced concrete as a ready-made building material like bricks, rolled-steel joists, and timber, and thus to bring it into line with other materials by eliminating the setting period of the concrete—and, to a great extent, the cost of the falsework. Another great advantage gained by using the reinforced concrete as a ready-made material is the fact that more care can be exercised in placing the steel if the concrete is poured into moulds conveniently placed, and at the leisure of the contractor, than if it has to be put in on the site, perhaps under most inconvenient circumstances, in difficult positions, and in a hurry; while proper inspection is much facilitated by having the concrete all cast on the ground.

Quite a number of methods have been proposed for transforming concrete from a plastic material requiring site moulds, and time to set, into the ready-made article. The ideal state would be to have it in the shape of joists or slabs, or to reduce it to the simplicity of the brick, which only requires laying in place and grouting, and which is in reality the simplest and most foolproof of all building materials, having, it is true, quite a number of drawbacks that are not compensated for by its being foolproof.

There is, however, one inherent difference between the ready-made stock beam or joist in reinforced concrete and the rolled-steel or timber joist. The former being made of a material that is only homogeneous or monolithic if it is so designed (as is, or should be, always the case with site-poured material), it has certain peculiarities as compared with materials that are absolutely and always homogeneous. Being composed of two entirely different elements—concrete the compression member, and steel the tension member—reinforced concrete, it must be remembered is only capable of withstanding tension, shear or bending, if it is made to do this by the introduction of suitable reinforcement. A section of, say, 12 in. by 12 in. concrete will stand thrust without any reinforcement, but hardly any tension, shear, or bending; it will stand bending in one direction if steel is introduced in the tension side, or in both directions, or all the way round if sufficient reinforcement is put in to take care of all the tension stresses. A corresponding steel or timber section, on the other hand, will, in virtue of the true homogeneous character of the material, stand not only compression, but tension, shear, torsion, and bending, without any doctoring. To illustrate this point, it is only necessary to imagine that the beam in question were turned upside down. A rolled-steel or timber joist would take the load equally well, whereas a reinforced-concrete beam which is designed for bending in one direction only would probably

collapse if turned upside down. It could be made to stand the load equally well both ways by introducing reinforcement both top and bottom, but this would mean doing away with some of the economic advantages connected with the use of reinforced concrete.

In this connection there is also the question of shear to be considered. In the rolled-steel joist the shear is taken by the web, in the timber joist by the action of the timber section, but in the reinforced concrete beam it is nearly always the shear reinforcement that has to provide for this, most frequently in the shape of bars cranked up towards the end of the beam. If a stock beam is too long and has to be cut off, this operation does not affect its resistance to shear in steel or timber joists; but it may seriously affect the reinforced concrete beam by cutting off the cranked bars at the end, which would have resisted the shear. Before making beams of this kind in reinforced concrete it would therefore be desirable to know beforehand all the forces to which they would be subject, so as to be able to determine the actual reinforcement required.

From the foregoing considerations it would appear that if reinforced concrete is to be used as a ready-made stock unit the latter should preferably be small enough to obviate any cutting of length. Reducing the size of the unit also tends to lessen the work in handling them, and here again the comparison with the brick is not beside the mark, although perhaps it is too much to hope that reinforced concrete should ever be reduced to the same degree of foolproofness and ease of handling as the common brick.

## LONDON COUNTY AND WESTMINSTER BANK.

Mr. Walter Leaf, Deputy Chairman, presided at the annual general meeting of the London County and Westminster Bank, held last Thursday. In moving the adoption of the report, he said that the state of affairs shown in it was one of which the bank might be proud. So far as the internal affairs of the bank were concerned, the year 1916 had been one of steady and very profitable prosperity. The net result was that they had not only written down their investments to a point at which they stood that day well under the market price, and paid the same dividend as last year, but they had also been able to resume their practice—a very sound rule—of writing a large amount, £100,000, off their premises accounts which now stood at almost the same sum as two years ago. That reduction, in view of the low figure at which their premises stood in their books, might be regarded as practically an addition to the reserve. With respect to war loans, Mr. Leaf made an exhaustive statement, the conclusion of which he said that if all their customers, according to their means, would come to them ready to lend not only their savings in the past, but with the banks' assistance their savings in the future, and above all, determined to increase those future savings to their utmost power, then, and then only, would the Loan be an assured success. It lay in the hands of the small man. He moved the adoption of the report, which was carried unanimously.

The retiring directors were re-elected and the auditors re-appointed. Cordial votes of thanks to the chairman and the directors and to the officers and staff were unanimously passed.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

FEBRUARY 7, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1153.

CONFIRMING an observation made in these columns a few weeks ago, to the effect that market-gardening operations do not exactly improve building sites, a correspondent sends a newspaper cutting which refers to a somewhat similar kind of disturbance, for which compensation is sought. A plot of land, comprising about eleven acres, had been intended as a site for small house property, and, according to the owners, has been rendered unfit for that purpose by trench-digging demonstrations. In reply to the case stated before the Defence of the Realm Losses Commission, a War Office representative developed an exceedingly ingenious argument. Lots on the estate, he said, were sold as long ago as 1904, and to the present date no more than twelve houses had been erected. If the estate did not develop any faster, there would be ample time for the disturbed land to consolidate before it was required for building! Chemical analysis of this contention would probably reveal some slight trace of sardonic humour. Within what geological period of time would a seven-foot-deep trench "consolidate" itself? And is the building of twelve houses between 1904 and 1917 an alterable rate of progression? As an American might say, the joke is on the landowners, who were in a better position to enjoy it after the announcement that their case would receive "due consideration."

For reasons best known to themselves, our forefathers were wont to build their houses with overhanging storeys. Very modern French architects are reversing this method. Messrs. Sauvage and Sarazin have built, in the Rue Vavin, a house in which each successive floor is set back several feet, with the object of giving better access of light and air to the lower storeys, and of causing less obstruction to the ancient rights on the opposite side of the road. Here we scent danger. Opponents of reform of the laws as to light and air in this country, driven from their present untenable position, may seek refuge in the compromise suggested by the stepped house; which is itself a sort of compromise on the tiers of streets imagined by someone who, struck by the ingenuity of the Rows in Chester, where one walks on top of one row of shops to view a second row, yearned for an extension of the principle. The mediæval builders of Chester, it is argued, would have pushed the idea to a logical conclusion (at the top storey) if only the sweet uses of the passenger lift had been known to them.

With street piled above street, shop-front above shop-front, the shopkeeper could realise the ideal for which his soul craves—an entire front of unbroken (generally speaking) glittering glass, which should so gratify the architectural sense of propriety because the "acres of glass" will no longer seem to hold up tons of heavy upper storeys, but only the final fascia. Thus the stepped house will solve several problems. It will also create several others. Whether successive steps would afford a more convenient vantage for hostile aircraft bombs or for the steel network to repel them is a negligible point, because hostile airmen seem to have lost their esteem for both Paris and London as health-resorts to which joy-

jaunts could be made with impunity; but consider the effect of an entire street of stepped buildings, one side of the road recoiling from the other as in horror at a row of protruding chins and receding foreheads. And the perspective! And the photographs, which magnify the receding chins and dwarf the receding foreheads!

As architect to the School Board for London, Mr. E. R. Robson, whose death we briefly recorded last week, enjoyed larger opportunities than fall to the lot of most architects of influencing the public taste. His work confronts the Londoner at every turn, and, by its subject, in which every passer-by is more or less personally interested, attracts more attention than is bestowed upon any other class of building. For good or ill Mr. Robson's Board schools have had therefore a widespread educative influence which is supplementary to their accredited functions and is powerful beyond the dreams of the incomplete educational theorist. True, the influence is commonly subconscious, working as leaven in a community that may appear to be insensitive to it; but the architect designing a building to be put up near a Council school feels, more often than not, under some compulsion to bring his work into harmony with the school that dominates the district. And in other ways the leaven works. Its effects are reflected in varying degrees and in divers manifestations in the habits of the people and in the character of the secular buildings that have since arisen in Board-school environment. That the people are but dimly conscious of this pervasive influence does not materially modify its force.

It follows that common-schools, possessing by their numbers and their communal interest an intense prepotency, should be designed with a fuller realisation of this important fact. It is an educational responsibility to "design in beauty and build in truth." Outside and inside, the common-school should symbolise the dignity and grace of the popular educator. Mr. Robson did very well. Most assuredly, his schools are not lacking in dignity; indeed, the early opponents of popular education have imaginatively urged against them that they are "palatial." They marked, at all events, a great advance on the paltry pseudo-Gothic "national" or "British-and-Foreign" schools that they superseded. They would have been far more expressive of their function, however, if they had been designed with a clearer consciousness of the source whence educational ideals have come down to us. Possibly Mr. Robson—who, indeed, was so excellent an architect as to make his absorption in School Board work the more regrettable—was not himself responsible for the choice of style; nor is he to be blamed for its stereotyped reproduction all over London. As we have frequently contended, no town should be thus placed at the mercy of an official architect—an obvious truism that the London County Council had at length taken to heart when, before the war brought their building operations to a standstill, they took the common-sense course of inviting competitive designs. It should not be necessary to remind them that there are other ways of avoiding the monotony of repetitive official architecture.

## A NOTE ON "THE KING'S PALACE AT PIMLICO."

BUCKINGHAM PALACE has not, strictly speaking, changed its form so radically as to warrant the statement sometimes made that it has "undergone complete metamorphosis." For it still retains, though hidden by the east block that spans across the wings, its original courtyard façade, and the little low wings are as John Nash designed them.

As Nash left it, "the King's Palace at Pimlico," as it was called in his day, faced St. James's Park for a length of 485 ft., each wing being 150 ft. long, with 185 ft. for the central portion. Below is a reproduction of an engraving of the front as it appeared in 1837, in conjunction with which the following contemporary description may be given: "The centre is a parallelogram, and recedes from the wings 340 ft., forming a court, through which the carriages pass under the portico in the middle of the principal building. Between the wings, and situate about 100 ft. in advance, is an entrance lodge, consisting of three archways built of white Carrara marble, assimilating in design to the triumphal arch of Constantine at Rome; the whole court from the wings to the lodge being enclosed by a richly ornamented bronze railing. The external appearance of the ground-floor is of the Doric, and the principal floor of the Corinthian order, richly embellished with groups of illustrative figures and statues." The "entrance lodge" referred to is of course the "Marble Arch": its original appearance is well shown in the engraving reproduced as a plate in this issue.

It was Edward Blore who built the block at the front across the two wings, which front was refaced under Sir Aston Webb's direction in 1913.

## THE PLATES.

*Buckingham Palace.*

REFERENCE to these plates is made in the article on this page.

*Trajan's Column, Rome.*

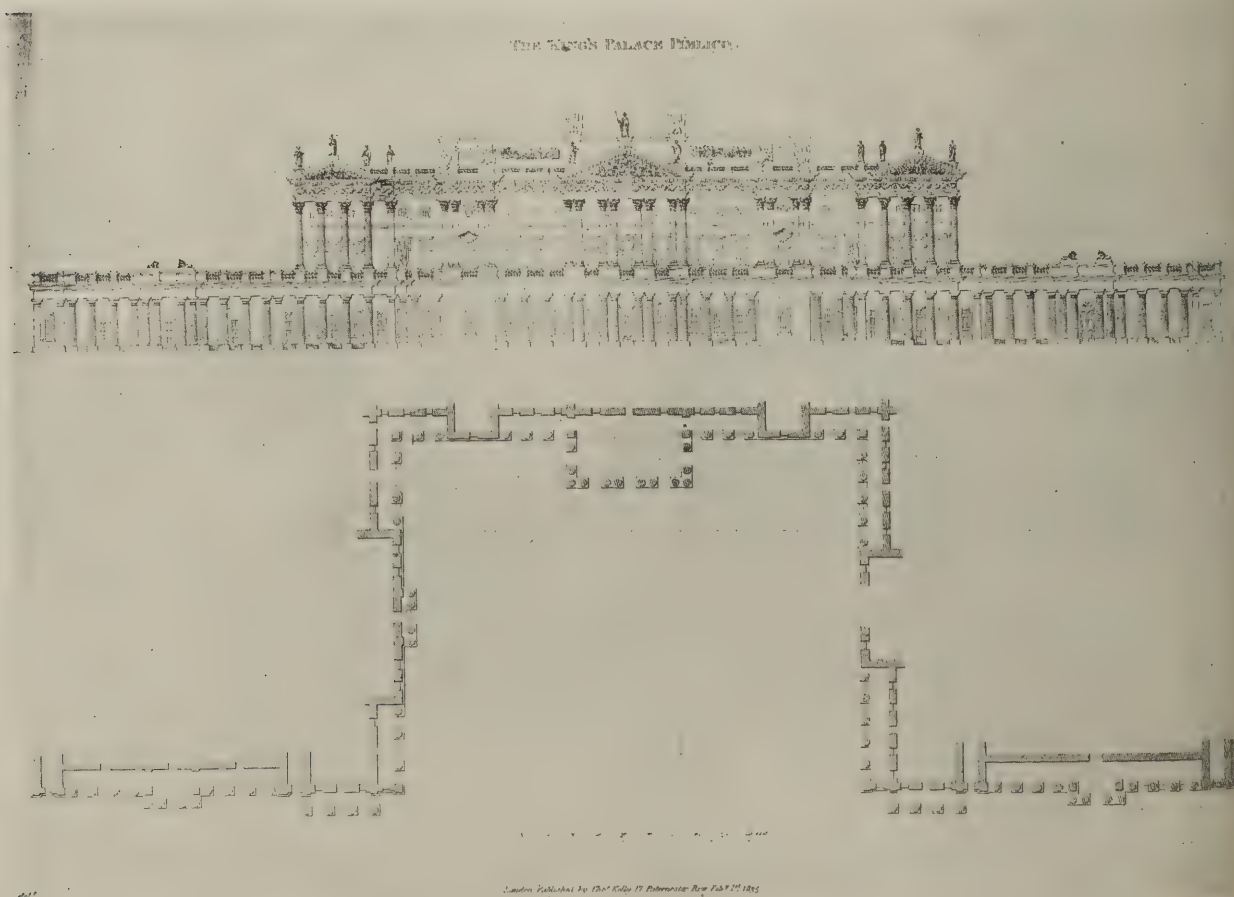
Among the many forms adopted for important monuments commemorative of the present War, columns and obelisks will take a conspicuous place, and we have thought it to be of service therefore to publish a series of plates showing what has been accomplished in this direction from Roman times down to our own. Great arches and columns were favoured by the Romans for memorialising their triumphs, and among the many columns they erected, that to Trajan is pre-eminent. It commemorates the Emperor's victories over the Dacians, and is said to have been designed by Apollodorus of Damascus (A.D. 111-114). It is a Roman Doric shaft, 12 ft. in diameter at the base, formed of great drums of marble, up the surface of which winds a spiral band of sculpture depicting innumerable scenes of the campaigns. Originally a bronze statue of Trajan, 20 ft. high, stood on the capital, but this was replaced in 1587 by a statue of St. Peter, which remains to this day.

*Door in the Galleria Poldi Pezzoli, Milan.*

We have not been able to ascertain the date of this fanciful piece of work, but it appears to belong to the last century. There is an element of freakiness about it, but the details are in good taste, and the little central figure is beautifully modelled.

*Mess-rooms in a Munitions Factory.*

The factory to which these mess-rooms are appended is described in the article on page 75.



THE FRONT OF BUCKINGHAM PALACE AS ORIGINALLY DESIGNED BY JOHN NASH.





MONUMENTAL ARCHITECTURE (SERIES II.). VII. — FRONT OF BUCKINGHAM PALACE AS ORIGINALLY BUILT.

JOHN NASH, ARCHITECT.

*From an engraving by Thomas Higham.*







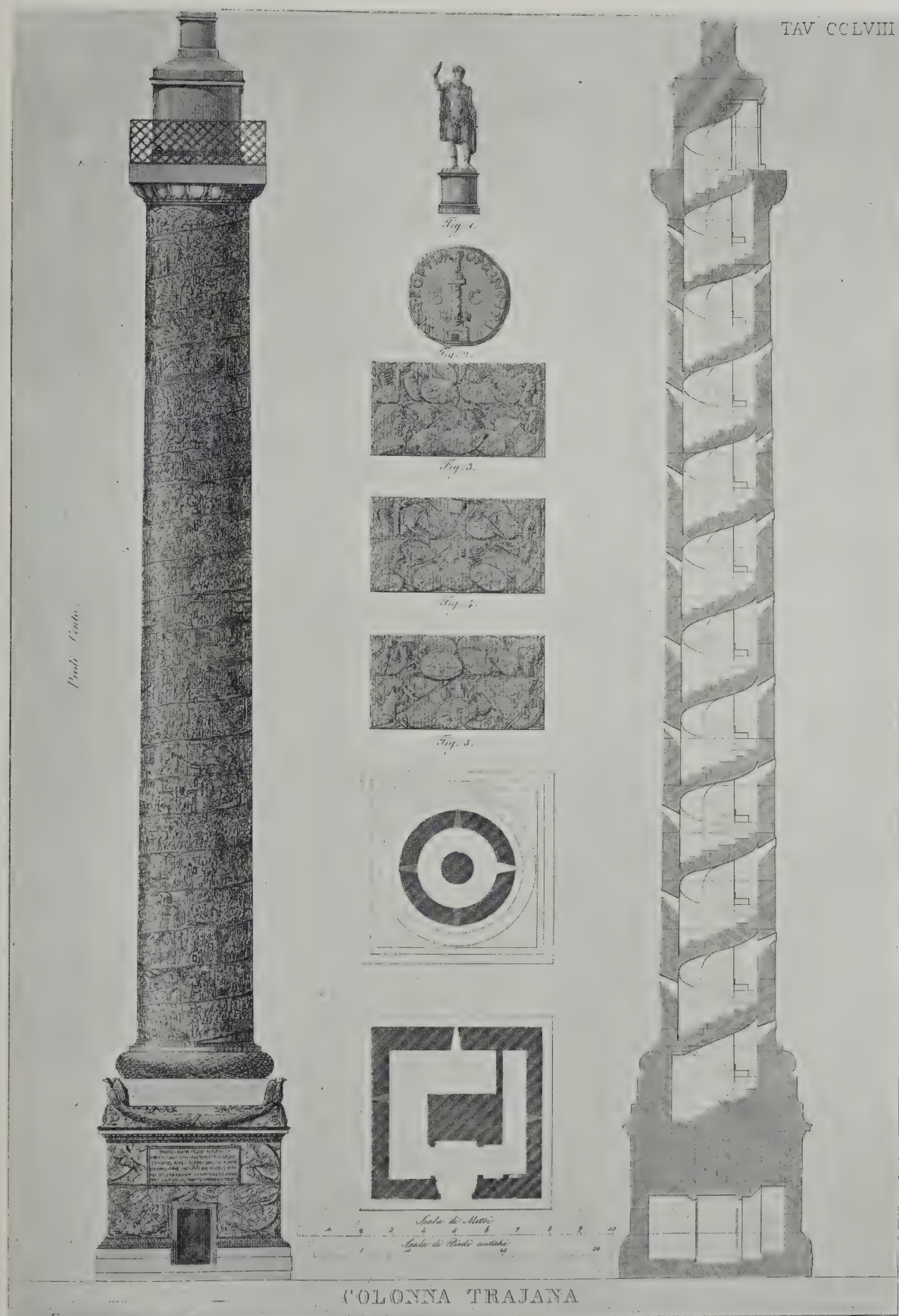
MONUMENTAL ARCHITECTURE (SERIES II.). VIII. — GARDEN FRONT OF BUCKINGHAM PALACE AS ORIGINALLY BUILT.

JOHN NASH, ARCHITECT.

*From an engraving by Thomas Higham.*







COMMEMORATIVE COLUMNS AND OBELISKS. I.—TRAJAN'S COLUMN, ROME.

(From Canina.)







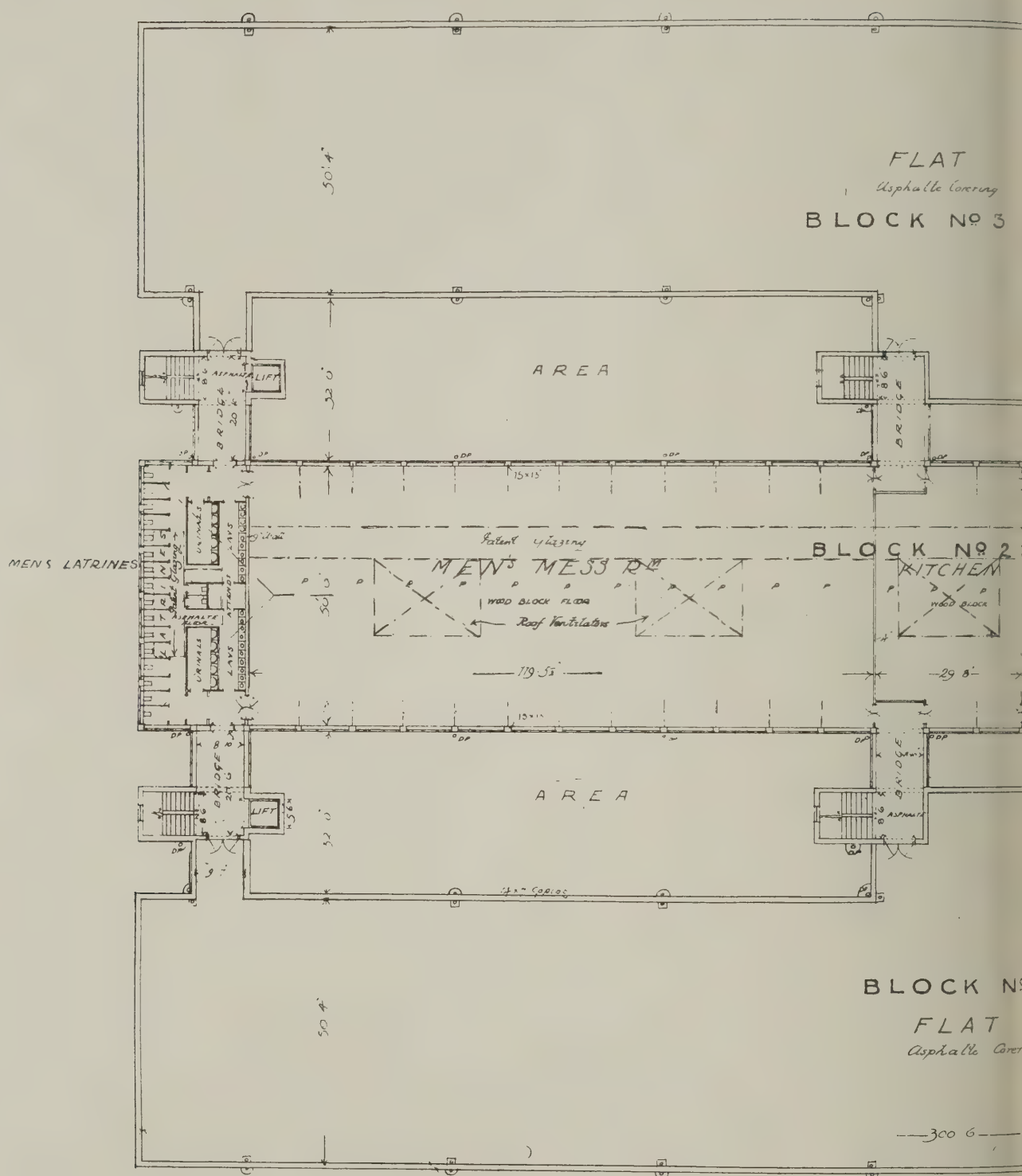
DOORS AND DOORWAYS. XVI. —A DOOR IN THE GALLERIA POLDI PEZZOLI, MILAN.





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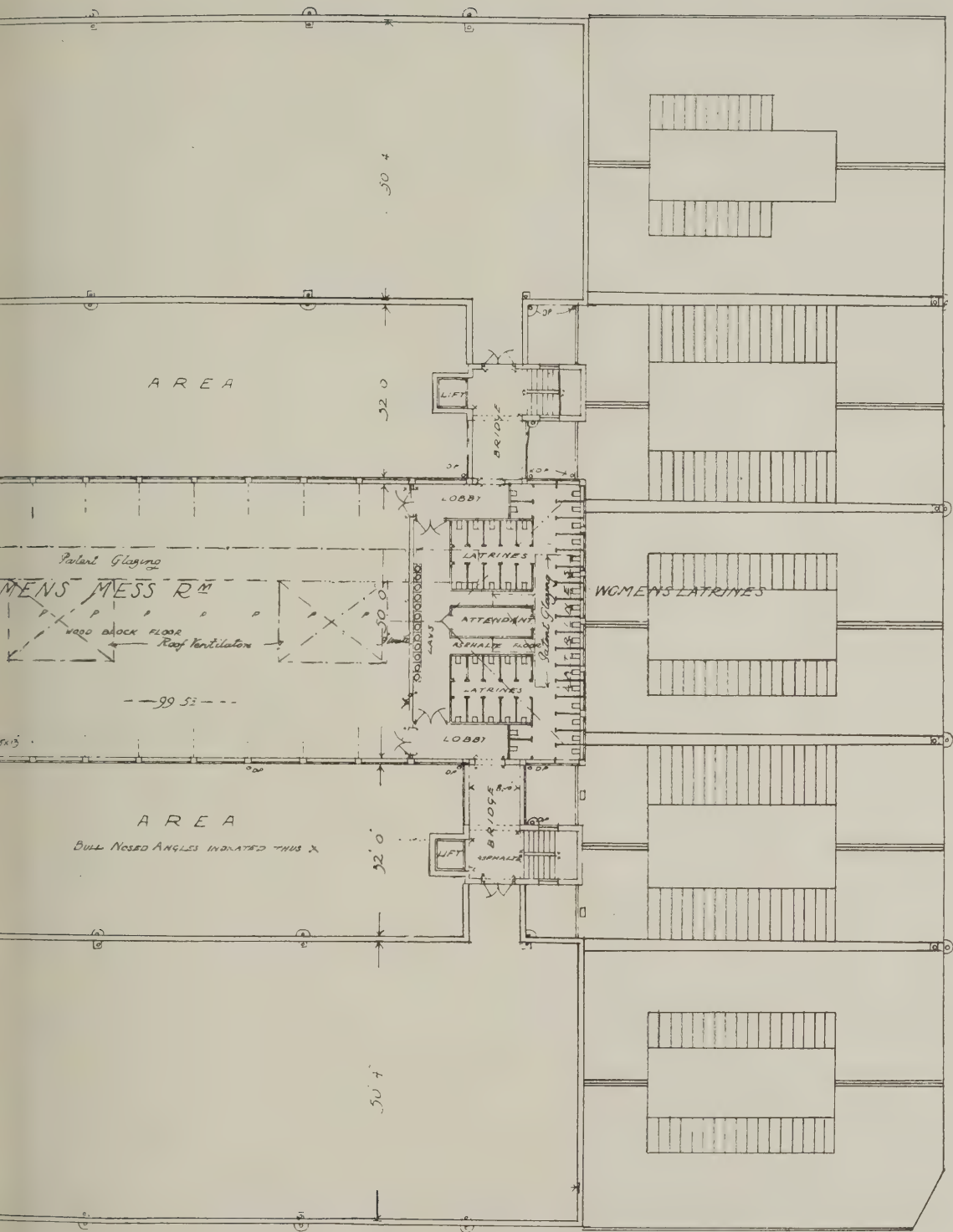


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MODERN INDUSTRIAL BUILDINGS. III.—MESS ROOMS

BUCKLAND, HAYWOOD & CO.





PLAN.

ON WITH A LARGE MUNITIONS FACTORY.  
ARCHITECTS.





## NATIONAL FEDERATION OF BUILDING TRADES EMPLOYERS: ANNUAL GENERAL MEETING.

The annual general meeting of this Federation was held on January 31, at the Connaught Rooms, Kingsway, London, W.C.

In moving the adoption of the Council's report, the President (Mr. W. F. Wallis, J.P.) remarked that the work of the Federation since the war had been in excess of that in times of peace, and that the correspondence had trebled. The work of the Conciliation Board had been also somewhat excessive, on account of the labour unrest following upon an all-round disturbance of prices. Referring to the revised forms of contract and sub-contract, he stated that this subject had entailed much work, which had now been completed. In the main form of contract, as presented by the North-Western Federation, some important amendments had to be considered and referred back to the Contract Sub-committee. The form would eventually be sent on to the Institute of Builders, and that body asked to join the Federation in presenting the proposals to the R.I.B.A. Failing agreement with the R.I.B.A., it was suggested that the matter be referred to arbitration under the chairmanship of Sir George Askwith, as was done in the case of the Scottish Form of Contract. Thanks were due to the North-Western Federation and their secretary, Mr. Moss, for the way in which they had taken up this matter. After a brief reference to the apprenticeship problem, and the necessity of grappling with it at once, in preparation for the conditions that would arise after the war, the President dealt with the question of pre-war contracts. It is possible that a Bill relating to the matter may be presented, which is expected to deal in a fair manner with all contracts the carrying out of which has been rendered difficult or impossible owing to the war. The measures which the Federation had in contemplation with respect to building licences had been interrupted by the change of Government, but the future course of action had been carefully marked out by the Council.

The report by the Contract Sub-committee having been submitted and adopted, Mr. White read the following supplementary statement: "In addition to what already appears in the report, it may now be added that the Contract Sub-committee met on January 16, 1917, and considered in detail the various suggestions for amending the draft form of contract now under consideration. Many of the suggestions were adopted, subject to the approval of the legal adviser. Some were sent forward to the latter for his consideration, and he has been asked to draft a suitable clause to enable those suggestions he deems practicable to be incorporated in the document. Others were rejected by the Committee. The general suggestions of the Yorkshire Federation in regard to future procedure in the event of the R.I.B.A. rejecting our new proposals are—that, failing any satisfactory agreement, we should try to follow the procedure adopted in Scotland, and have the matter referred to arbitration under the chairmanship of Sir George Askwith, and that representatives of the architects, surveyors, and public authorities, as well as of ourselves, should be asked to take part in the proceedings. As soon as the Committee has brought the present revision to a conclusion, it is pro-

posed, if the Council now assents, that the revised document should be sent to the Institute of Builders, with a request that it will consider it, and co-operate with the Federation in making a joint representation to the R.I.B.A. in regard thereto, and the Committee would like to be empowered to act on behalf of the Federation in so furthering the matter." This course was approved.

Regarding the Belgian Fund, it was stated that for the moment there was no necessity to make any further proposals, provided arrears still outstanding be paid up.

Council having confirmed the recommendation of the Administrative Committee that the rates of subscription and contribution to Reserve Fund for 1917 remain the same as 1916, this was agreed to.

A resolution proposed by Mr. Storrs and seconded by Mr. Willcocks to alter Rule 4 of the National Scheme of Conciliation was agreed to, but the addition of the word "local" before the word "centre" in the first line was thought desirable. The addition to the first paragraph of the said rule will therefore read: "That when a secretary of a local centre or National Conciliation Board receives an application from either the employers or operatives, he shall intimate the same forthwith to his joint secretary, and forward an exact copy of the application, and the joint secretary shall supply the other party with a copy."

At a meeting of secretaries of important organisations, convened by Mr. Biggart (Ship Building Federation), and presided over by Sir T. R. Ellis (Coal Owners' Association) in October last, it was recommended that the secretaries should ask their respective associations whether it is desirable to call a meeting of representatives of the various federations of employers to consider what steps can be taken to submit the views of employers to Government Departments, and that the associations be asked to name representatives to attend the meeting. This matter was referred to the Administrative Committee with power to act.

Copies of a pamphlet dealing with the position of apprentices after the war having been circulated by the Institute of Builders asking for views of associations on the scheme, the Council of the Federation had signified its approval of the scheme, and had instructed Mr. White to communicate with the Institute of Builders to that effect. Mr. W. J. Renshaw (London) moved that the scheme be approved, and that arrangements be made for further conference on the subject.

The Secretary mentioned that, at its meeting on the previous day, the Council had dealt also with following items: Letter from Building Trade re discharge of wounded soldiers and work for them. Request for information upon possibilities of making use of such men in Building Trade and asking our organisation to assist. The Council agreed to the request. The Council had appointed a special Committee to report on the rules of the Federation and the basis of subscription and representation.

Mr. W. J. Renshaw (London) moved that "in view of the urgency and importance of questions which have arisen at the present time, and the need for proper action in regard thereto, the Administrative Committee be requested at the next meeting to appoint an Emergency Committee to deal with any matter as and when it arises; the Emergency Committee to report to the Administrative Committee." The resolution was adopted.

On the question of allowances in respect of extra costs of carrying out pre-war contracts, Mr. A. G. White, the Federation secretary, explained that local authorities have taken into consideration contracts carried out under war conditions, and made concessions, but such cases are not always reported to him—it would be helpful to other members if he were kept informed on such matters. Local authorities find difficulty in getting allowances passed by the Local Government Board, and ask for precedents. When an application for information and precedents reaches him, where there are negotiations, he can send such correspondence to the member and his adviser, and they can deal with it without delay.

On the announcement of the results of the elections of officers and committees, Mr. B. J. Moss (Liverpool) urged that master slaters and sub-contractors should have been included on the Demarcation Committee, and the matter was referred to the Administrative Committee, who, on the suggestion of the chairman, would also consider the advisability of including master plasterers and certain others on the revised list.

The Chairman moved, and Mr. Samuel Smethurst, J.P., seconded, that Mr. James Storrs, J.P. (Stalybridge) be president for the ensuing year. Mr. Storrs, the chairman remarked, possessed every qualification necessary and acceptable as President of the Federation; and Mr. Smethurst, J.P. (Oldham), observed that no one had the confidence of the trade union leaders more completely than Mr. Storrs. Mr. E. J. Brown (London) also supported the nomination, and Mr. Storrs was unanimously elected president.

Mr. Storrs, in thanking the meeting for the honour, said that it was thirty years since he first attended a National Federation meeting, and that he had had the honour of being president of the Lancashire Federation. Turning to the subject of the proposed new form of contract, Mr. Storrs said it was manifestly unfair that architects should be the sole arbitrators upon the question of materials to be used: disputes on such matters ought to go to arbitration. In conclusion, he moved a vote of thanks to Mr. Wallis for his able services as president during the past year, and suggested that his name be added to the list of vice-presidents. This was carried unanimously.

Mr. W. F. Wallis, in acknowledgment, said that his year of office had been a most strenuous one, and that, in spite of ill-health, he had done his best to further the interests of the Federation. He offered his hearty thanks to Mr. White and his assistant for their services during the past year, and Mr. White replied.

Mr. Talbot (North-Western Federation) said that his Federation appreciated very highly the honour reflected upon it by the election of Mr. Storrs to the presidency. He invited the National Federation to visit the North-Western Federation for their next half-yearly meeting.

Mr. J. B. Johnson moved: "That this meeting enters its protest against the recent increase of 50 per cent. in railway passenger fares, and asks for early relief of same as being a restriction to trade." This was seconded by Mr. Costain, and carried.

Mr. Watkin Williams (South Wales Federation) gave an address on Local Taxation. Time for discussion was lacking, however, and it was decided to have the question further considered in preparation for the next half-yearly meeting.



## THE LATE MR. S. STEVENS HELLYER.

An appreciation of the late Mr. S. Stevens Hellyer as a pioneer of applied sanitary science, appears in the editorial columns of our issue for January 10. We have now much pleasure in reproducing the accompanying portrait of Mr. Hellyer, together with brief biographical particulars.

Mr. Hellyer, who passed away on December 8 at Berne, Switzerland, was in his seventy-sixth year. He was for many years head of the firm of Messrs. Dent and Hellyer, sanitary engineers. The firm dates back to 1730. He came to London many years ago from Devonshire, and entered the firm of Messrs. Beard and Dent, in whose business he soon took the leading position. After a few years he was able to put into practice the improved methods of sanitation which he conceived the age demanded for the health and well-being of the nation. In 1871, when the country was full of anxiety for the life of her future King, who was suffering from a serious attack of typhoid fever which was attributed to bad sanitation, the whole nation became alarmed when it was discovered that, from palace to cottage, sanitary arrangements were, to a very large extent, in a deplorable condition, and required thoroughly overhauling and reconstructing. At that period commenced the great movement towards sanitary reform, in which Mr. Hellyer played an extensive and important part. He made the subject of domestic sanitation his special study, and besides planning and executing innumerable sanitary works both in town and country, from royal palaces to modest country houses, he invented and patented numerous sanitary fittings and appliances which are still regarded as standards, being extensively used at the present day. In 1874 he became a partner in the firm,

which was thereupon known as Messrs. Dent and Hellyer, and in 1888, on the retirement of Mr. William Dent, he became the sole proprietor of the business of the firm, and subsequently in this connection he was honoured by being appointed Royal Warrant Holder respectively to her late Majesty Queen Victoria, his late Majesty King Edward the Seventh, and our present King. We have it on good authority that he was recommended for a knighthood, but it was only in keeping with his general modesty that he should have declined this honour. During 1881 he delivered a course of free lectures at the Society of Arts for the National Health Society, in which he proved, with the aid of numerous large coloured diagrams and by practical demonstration, the advantages of new and improved methods of sanitation. The lectures caused quite a commotion in the plumbing trade, and on each occasion the hall was overcrowded. Most of the lecturer's contentions, though hotly contested at the time, have been accepted as sound doctrine in the modern methods of sanitary work. The lectures were repeated at a later date, and were subsequently published in book form. Mr. Hellyer also wrote "The Plumber and Sanitary Houses," which ran through several editions, and of which a French translation was published in Paris; and his students' book on "Principles and Practise of Plumbing" took rank as a standard text-book.

Mr. Hellyer took great interest in the technological training of plumbers, and was the first examiner in "Plumbers' Work" for the City and Guilds of London Institute about the year 1879, which position he held for five years. He was afterwards appointed Consultative Examiner to the Institute, and also became Examiner of "Plumbers' Work" for the Carpenters' Company. Those who were intimately associated with him cherish his memory as that of a true friend and generous employer.



THE LATE MR. S. STEVENS HELLYER.

## OBITUARY.

### *Mr. E. H. Lingen Barker.*

Mr. E. H. Lingen Barker, of the firm of Lingen Barker and Anthony Barker, passed away at his residence in London on January 27, at the age of seventy-eight. Mr. Barker built or restored a very large number of churches in different parts of England and Wales, and latterly had identified himself with a movement for the erection of churches to meet the needs of the growing populations in our large industrial centres. He had also a considerable school practice, and had held the appointment of architect to ten School Boards. In consequence of the success that had attended his efforts in 1873 in shifting wholesale a large building in Chelsea that Earl Cadogan was interested in, the Right Hon. G. Shaw Lefevre, when H.M. First Commissioner of Works, applied to Mr. Lingen Barker in 1882 to devise a scheme for the removal of the Wellington Arch with its equestrian statue bodily from Hyde Park Corner into its present position in the Green Park. The scheme, which was of a very elaborate and interesting character, was accepted by the Government on the recommendation of Sir John Fowler, to whom the matter was referred. Mr. Barker was a member of several archaeological societies, and the author of several architectural essays, one of them being on Garway Church and the Knights' Templars, which he read before the British Archaeological Association at their Great Malvern meeting, and another on "The Domestic Mediaeval Architecture of Herefordshire," for the old Hereford Literary, Philosophical, and Natural History Society. He was the author of "Parish Churches of the Diocese of St. David's" and "Warwickshire Parish Churches," the latter being intended by the then Bishop of Worcester, Dr. Philpott, to form the first part of a diocesan handbook.

### *Mr. Herbert Hodkin.*

The death of Mr. Herbert Hodkin, founder and chairman of Hodkin and Jones, Ltd., reinforced concrete engineers and building material merchants, took place at his residence, Lime Leigh, Montgomery Road, Sheffield, at the age of seventy-three. Mr. Hodkin was a descendant of an old respected Derbyshire family, resident at Brampton, near Chesterfield, dating back in the Parish Church registers to 1686. Going to Sheffield in 1858, he served seven years' apprenticeship in the building trade, and began business on his own account in 1868, and was joined in partnership by Mr. William Jones in 1878. The business which Mr. Hodkin founded has been one of steady growth, and the extensive works in Queen's Road and other branches in the Sheffield district testify to his commercial success. He leaves five sons (one of whom is a Wesleyan minister and Chaplain to H.M. Forces in South Africa) and two daughters.

### *Mr. Wm. Bowdler.*

Mr. Wm. Bowdler, builder, of Belle Vue, Shrewsbury, whose death is announced, was eighty-one years of age. With his late partner, Mr. H. T. Darlington, he was in early years associated with Mr. Pountney Smith. Specialising in ecclesiastical work, Messrs. Bowdler and Darlington carried out many important undertakings, including the building of Meole Church, All Saints' Church, Shrewsbury, and the restoration of Chirbury, Minsterley, and Market Drayton Parish Churches and of the Abbey Church, Shrewsbury.





## WAR BUILDINGS SECTION

### A MUNITIONS FACTORY.

THE accompanying illustrations show a munitions factory which has recently been erected from designs by Messrs. Buckland, Haywood and Warner, architects, of Birmingham. It is a frank piece of architectural construction in reinforced concrete, and serves to show what good results can be obtained when an industrial building is designed in a thoroughly modern spirit. It proclaims itself to be exactly what it is—a factory, and as such it claims our respect, for it is not tricked out with architectural appendages that are as artificial as they are irritating, but gains its expression through the essential character of its structure.

The factory consists of four blocks of buildings, each 300 ft. by 50 ft. inside, and comprising ground, first, and second floors. The blocks are separated by stairs 32 ft. wide, and in these areas are staircase blocks rising from the ground floor to the second floor. The staircases land at first and second-floor levels on to bridges which span between the blocks and connect up the whole of the buildings. Opposite the four end staircases and on the other side of the bridges are lifts which enable goods to be raised or lowered and conveyed by means of the bridges into the required blocks. On the top floor of block No. 2 are large dressing-rooms and appurtenant offices for men and women workers, the arrangement of which part of the factory can be studied from the plan published as a double page plate in this issue.

At the east end of the factory are two three-storey buildings containing the gaseous furnaces and generators. The first extends for the whole width of blocks 1, 2, and 3, including the width of the two areas between; the second is opposite block 4. Both buildings are 10 ft. 4 in. in depth.

The bearing capacity of the top soil at the site was very meagre, as it contained a considerable amount of clinker and made-up ground. The founda-

tions therefore had to be carried down to a considerably lower level. The necessary hard clay bottom was determined as the excavations proceeded, varying from 4 ft. to 11 ft. below ground level. The foundations consist of a reinforced concrete slab carrying a centre longitudinal beam upon which the columns to the buildings are carried in their turn.

The wall columns and the row of columns down the centre of each block are spaced at 10 ft. centres. There is thus a clear span between the centre columns and the external columns of 25 ft. 6½ in. across the building, and 10 ft. in a longitudinal direction to centres of columns (external and internal).

The external columns are 22 in. by 13 in. from foundation to first floor, reinforced with six vertical bars and with links at 6 in. centres. They are grooved above the ground floor for a 4½ in. brick wall up to sill level and for steel window frames from sill level up to the head of the window.

The external walls are 11 in. over all, consisting of two walls 4½ in. thick with a 2 in. space between. The outer 4½ in. wall is bonded into the reinforced concrete columns by means of the groove already mentioned.

The ground floor of each block is of concrete 6 in. thick reinforced with a mesh of steel bars in the top of the slab, whilst over the trench where excavations were made for the foundations of the centre columns bars are placed in the bottom of the slab to prevent cracks due to any shrinkage of the filling that may occur. This ground-floor slab was everywhere made to act independently of the walls and columns, so that if the earth filling should shrink the slab could adjust itself to the new level without affecting the walls or columns. The slab was not constructed until the upper floors were finished.

The centre columns are 18 in. by 18 in. reinforced with eight bars vertically and with binding links horizontally. All external and internal columns have brackets bolted to them for carrying shafting and have been designed for a pull of two tons at a lever arm of 33 in.

The first-floor slab is 4 in. thick reinforced with bars, half of which are bent up over the beam support.

The main beams are 24 in. by 11 in. below the slab, haunched down on to columns, and of 25 ft. span; they are spaced 10 ft. centre to centre, and take a bearing at one end on the external columns and at the other end on the centre columns. These main beams are reinforced with seven bars, five of which are bent up at the supports to resist the diagonal tension and are carried along the top of the beam over the centre column support to take the negative tension at the top of the beam.

In addition to the main slab reinforcement which runs parallel with the main beams, other slab reinforcement was put in over the top of the main beams, extending for 3 ft. on each side of same, to take the negative tension stresses in the slab over the beams, and also to assist in strengthening the tee of the beam against shear stresses.

The external walls at first-floor level are carried by beams supported by the external columns. These beams are 10 in. deep below the slab and 5 in. wide, the floor slab being thickened to 8 in. thick for a width of 6 in. at the beam. The beams are reinforced with four tension bars in the bottom, two of which are bent up over the column support as before described. Upon these beams the hollow brick walls are built for a height of 3 ft. 6 in., and steel window sashes and frames fitted in above this height. The beams also form the heads of the ground-floor windows.

The external columns from first to second floor are 22 in. by 13 in. and similar in section to the columns from



ground to first floor, but with less reinforcement, owing to the reduction in load.

The slab at second-floor level is 4 in. thick and is reinforced similarly in every respect to the first-floor slab. The secondary beams are of 10 ft. span, spaced 5 ft. apart, as on the first floor, and are 10 in. by 5 in. nett below the slab. The main beams are of 25 ft. span and spaced at 10 ft. centres, as on the first floor. The second floor was designed for the same loads as the first floor, viz., namely, 5 cwt. per square foot superload.

The second floor was finished in the first instance as a roof, as it was not considered advisable at the time to extend the external columns and cover in the building with steel trusses and light asbestos roofing slates. But owing to the immediate necessity of increasing the output from the works it was soon found necessary to convert this roof into a floor, for which it had been designed, and to extend the external columns upward and put on a roof.

The roof trusses are of 50 ft. span, so that a strong wind puts a very big bending moment in the external columns. In order to resist this moment, additional bars were placed at the bottom of the columns, extending into the lower columns and cut off at the top as the stresses become reduced. The columns are 22 in. by 13 in. for a height of 3 ft. 6 in. from floor level and 15 in. by 13 in. beyond this up to tie level. They are connected at the top by a 10 in. by 6 in. reinforced concrete tie-beam which runs around all the external walls.

The 14 in. brick walls enclosing the

staircases and lifts between the blocks are carried by beams at the ground level supported on columns and isolated bases down to clay foundation. The foundation bases to the columns are 4 ft. 6 in. and 5 ft. square by 22 in. and 27 in. deep respectively, and take the form of truncated pyramids. These bases are reinforced in two directions at right angles to one another in order to resist the tension stresses in both directions.

Above the second floor a reinforced concrete tank, with a capacity of 1,500 gallons, has been constructed over two of the staircases.

The building at the east end of the factory, containing the muffle furnaces and generators, extends for the whole width of blocks 1, 2 and 3, including the width of areas, and is 217 ft. 10 in. long by 63 ft. 4 in. wide, inside dimensions. The external walls to the furnace house are 14 in. thick and have reinforced concrete columns at about 12 ft. centres carrying the roof trusses. At the north end of the furnace house and opposite block No. 3 a floor was constructed over the generators for the storage of coal, 10 ft. from ground level.

Opposite block No. 4 a separate furnace and boiler house has been constructed, independent of the main furnace house, and over the boilers is a reinforced concrete tank, 40 ft. 8 in. by 30 ft. inside and 4 ft. deep, with a capacity of 35,000 gallons, for supplying the works with water. It is carried on three internal columns, two of which are 16 in. by 16 in. and one 14 in. by 14 in. The bases of these columns are isolated truncated pyramid footings. There are also eleven external columns assisting in

supporting the tank. The floor is 4 in. thick, of 6 ft. span, resting on 26 in. by 8 in. secondary beams of 25 ft. span. These slabs are reinforced in the usual way, with bars bent over the supports.

In carrying out the work much difficulty at first was experienced by the contractor (Messrs. William Moss and Sons, Ltd. of Loughborough) owing to bad weather but the operations were kept going night and day by two gangs of workmen (the buildings being urgently required), and in spite of the set back at the commencement the contractors were able to complete the work with remarkable celerity. In this connection it may be mentioned that the whole of the reinforcement to blocks 1, 2 and 3 and the muffle houses adjoining was delivered on the site within five weeks of the signing of the contract. The contractors were thus enabled to go ahead with all speed.

Immediately the first-floor slab and the beams to blocks Nos. 1 and 3 were sufficiently hard to allow the shuttering to be struck, the windows, doors, floor boarding, etc., were fixed and the building completed up to this level. The machine and shafting were then brought in and fixed as rapidly as possible, and the ground-floor shops were running in full working order about four weeks after the floors had been finished. The ground floor of block No. 2 was similarly occupied and finished, following which the first floors were quickly finished.

The Indented Bar and Concrete Engineering Co., Ltd., were responsible for the whole of the design and details of the reinforced concrete work, and supplied the reinforcing steel, which consisted throughout of Indented bars.

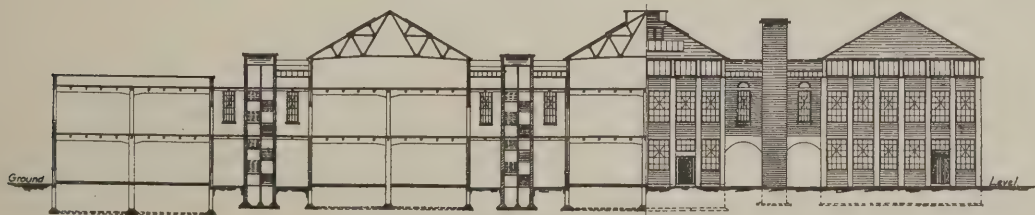
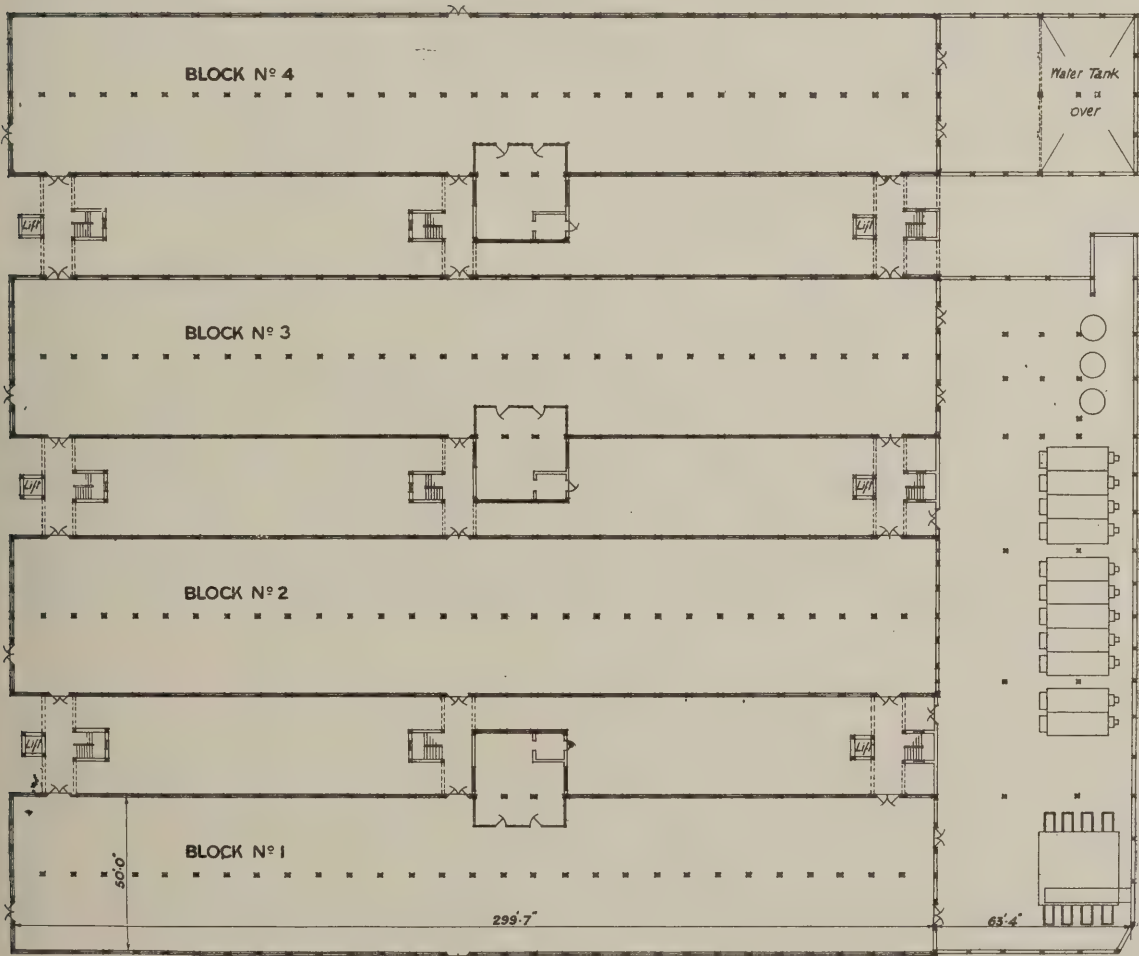


MUNITIONS FACTORY: INTERIOR VIEW OF ONE OF THE FLOORS.





General View.



Block Plan and Cross-Section.

A MUNITIONS FACTORY.     BUCKLAND, HAYWOOD AND FARMER, ARCHITECTS.

## EMERGENCY WAR HOSPITALS. I.—HUDDERSFIELD.

THE proposal to erect a War Hospital at Huddersfield originally took the form of acquiring certain schools and adapting them, but after an examination of the existing buildings the conclusion was arrived at that the cost and inconvenience involved by the alterations that would be necessary, first to adapt the buildings to hospital purposes, and subsequently to reinstate them for school purposes, would not be warranted by the results obtained—the adapted buildings, indeed, would have proved inadequate, and it was therefore decided eventually to erect an entirely new building. The Corporation of Huddersfield gave the scheme whole-hearted support; a committee was formed with the Mayor (Alderman J. Blamires) as chairman, and, with the consent of the

A large proportion of the work connected with the building and equipment of the hospital was carried out by local firms, and everyone concerned is to be congratulated upon the speed and satisfactory manner in which the work proceeded, especially when it is borne in mind that a period of only about two months had elapsed between the commencement of building operations and handing over to the War Department the hospital fully equipped ready for the occupation of the wounded.

In addition to the erection of the hospital buildings, the residence known as Royd's Hall, situate in close proximity, has been converted into nurses' quarters.

The hospital has been designed to accommodate 500 patients, with the re-

eastern ward. All the wards on the east side have accommodation for 50 beds each and the western wards 34, 36, 44, 68, and 68 beds respectively. In connection with seven of the larger wards, and situate in the centre of the same, is an "examination room." At the end of each ward are two private wards (for use in such cases cannot be put into open wards), ward kitchen, pantry, and linen stores, three bathrooms, and men's lavatories.

Separate inclined covered ways, 5 ft. in width, give access to the various wards and between these corridors are sluice departments for each ward and w.c.'s for the patients. Common to both wards these covered ways lead direct to the kitchen block, and in consequence of the fall of the ground, and the various blocks



View of Ward Block showing Open-Air Treatment on South Side.



General View of Buildings.

## EMERGENCY WAR HOSPITAL, HUDDERSFIELD.

Town Council, the services of the Borough Engineer (Mr. K. F. Campbell, M.Inst.C.E., M.Inst.E.E.), who had had a large experience in the construction of hospitals, were requisitioned by the committee, and he prepared the hospital scheme in all its details.

Before submitting the scheme to the War Office it was considered desirable to call in the services of Professor G. Sims Woodhead, who has taken a leading part in the arrangement of most of the hospitals erected since the War commenced. Professor Sims Woodhead went to Huddersfield, viewed the site, and approved the plans prepared for his decision. Subsequently the plans were submitted to the War Department and to the Headquarters of the Northern Command, York, who also approved them, and within a fortnight of the committee giving instructions for the work to proceed, tenders were accepted and the contractors (Messrs. John Radcliffe and Sons, of Huddersfield) had commenced operations on the ground.

quisite accommodation for the administrative staff. The buildings consist of ten wards, together with administration block, kitchen block, operation block, R.A.M.C. block, pack store, recreation block, mortuary, hospital supply block, disinfecting block, with boiler-house adjoining.

All the buildings are constructed of timber framing on brick foundations, with asbestos wall and boarded roofing covered with Ruberoid.

The heating and sanitary arrangements are on the most approved system, on a low-pressure hot-water system. Lighting is by electricity supplied from the Corporation mains.

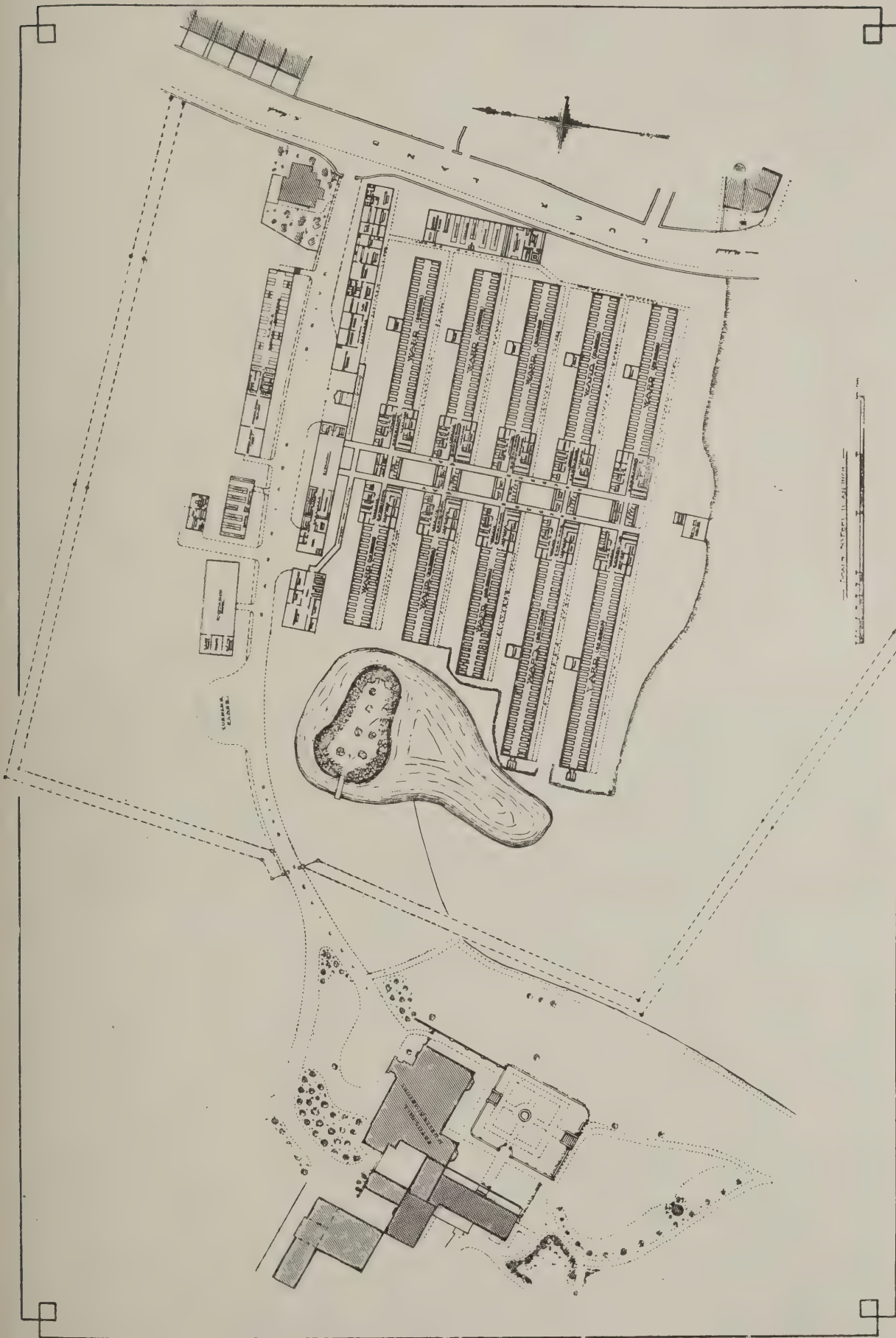
The hospital is arranged on the following lines: There is about one-third of a mile of wards, split up into five blocks of buildings running east and west. Each block faces south, and is divided up into three portions. The blocks vary in length from 311 ft. to 395 ft. They are all 21 ft. wide and 12 ft. 9 in. to the ridge of the roof. In each block is a western and an

being on different levels, all covered ways connecting the various blocks are inclined at an easy gradient. There are no steps at all in connection with the same.

The wards are enclosed on the east, west, and north sides, but the south side is entirely open to sun and air, except for a low fence at the front 18 in. in height and, as a precaution against rain, etc. blinds are provided which can be let down as an awning for protection against the sun, or drawn down vertically to enclose the wards if necessary in very bad weather and also to keep out the rain. Within each ward are two parallel rows of beds. During very bad weather, or a southerly gale, the front beds can be drawn back the passage between the beds being lessened or entirely done away with. Wooden-lagged paths connect all buildings.

The kitchen block is 93 ft. in length and 21 ft. in width; in cross-section practically the same height as the wards. The whole of the cooking is carried out by means of ranges and other appliance





EMERGENCY WAR HOSPITAL, HUDDERSFIELD. K. F. CAMPBELL, M.Inst.C.E., ARCHITECT.





concerts or entertainments, in which event the N.C.O.s' rooms serve as retiring rooms, the large hall being fitted up with tables, chairs, etc., and heated by means of stoves.

The mortuary is at the north end of the site, and is approached from the carriage drive. It is 68 ft. long by 28 ft. wide, and contains post-mortem room, body chamber, and viewing room, and is fitted up with all the necessary appliances pertaining to its functions.

A telephone system has been installed with a central exchange situate in a small office near the administrative block, through which communications can be established with all the several departments.

At the conclusion of the War, the War Department will, it is understood, return the buildings and equipment to the Hospital Committee.

The total cost of the hospital buildings, furniture, and equipment is stated to be £22,500—a very moderate sum, considering the up-to-date character of the hospital.

## DETAILS OF AMERICAN WAREHOUSE CONSTRUCTION.

In factory design and equipment we in this country can learn a great deal from American practice, and it is with that thought in mind that we here show some illustrations of details of construction in the reinforced-concrete cotton warehouses at present in course of erection at New Orleans. These warehouses are eight in number and are each nearly 700 ft. in length. They cover an area of about 50 acres. They are being built upon creosoted timber piles and are divided into compartments (100 ft. by 32 ft. on plan) by reinforced concrete fire-walls 12 in. thick, spaced at 32 ft. centres, and detailed as shown by the accompanying typical section. Expansion joints are provided at the centre of the larger buildings, and designed with special care so as to ensure weather-tightness. In the smaller buildings the expansion joints are off the centre, but directly opposite those in the

larger buildings. This was necessary in order that the crane runways could be extended through from one building to another. The flashing used and the methods of attaching it are here illustrated, showing both face-wall and dividing-wall joints.

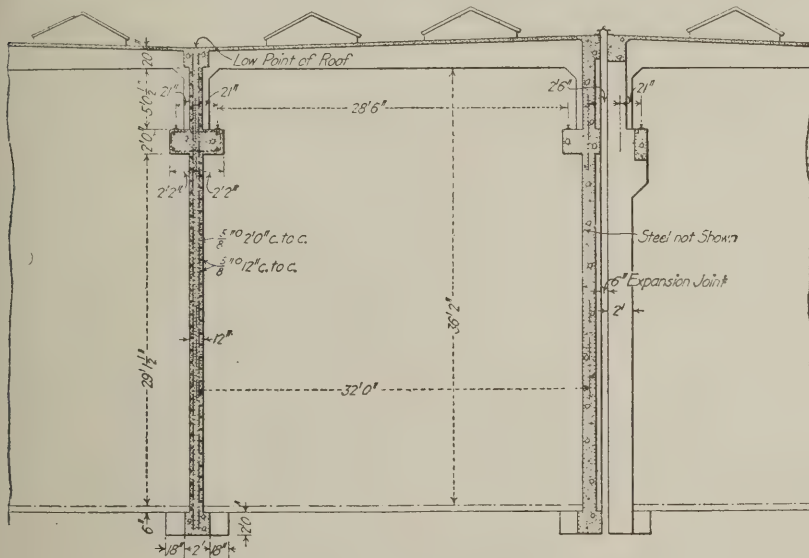
The walls are designed to resist the vertical loads from the roof and from the cranes, as well as the bending stresses caused by the eccentricity of the crane loads and by the horizontal pressure of the piles of cotton. Cotton was assumed to weigh 20 lb. per cubic foot, and, where piled against a wall, to exert a horizontal pressure equal to one-sixth of the vertical pressure. Cotton in the through warehouse was assumed to be piled 30 ft. high.

In addition to resisting the above loads, the walls and pilasters have sufficient reserve strength below the elastic limit of the reinforcement to resist a horizontal pressure of 200 lb. per square foot, which might be exerted by the top two layers of cotton (4 ft.) becoming saturated and swelling. This saturation might occur in case of a fire.

The crane loading on each rail consists of two wheels spaced at 9 ft. 7½ in. centres. The wheel supports are designed as a continuous shelf or bracket, carried by the walls without beam action. The rails are supported and held in place by malleable iron inserts, spaced at 3 ft. centres, and so designed that the bolts and clips holding the rails are easily inserted and adjusted.

In designing the brackets, the concentrated crane loads were assumed to be uniformly distributed over a horizontal distance of 2 ft.—the depth of the bracket. The ⅝-in. rods at 6-in. centres at the top of the bracket provide for the tension and aid in distributing unsymmetrical loads to the walls as eccentric loading. In computing the bending stress in the walls, the concentrated crane loads were assumed to be distributed along the wall between lines on a 2:1 slope, spreading over greater length as the distance below the load increased.

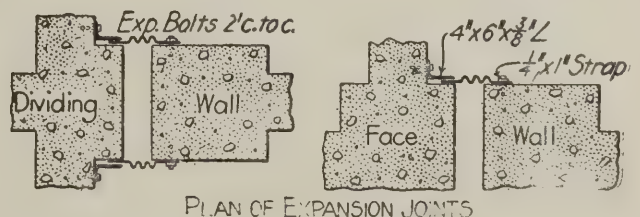
The warehouses were designed for the Board of Commissioners of the Port of New Orleans by the consulting engineers, Messrs. Ford, Bacon and Davis.



Typical Section showing Fire-Walls.

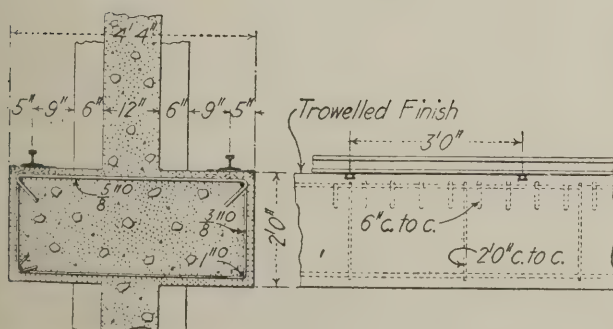


FLASHING AT EXP. JOINT

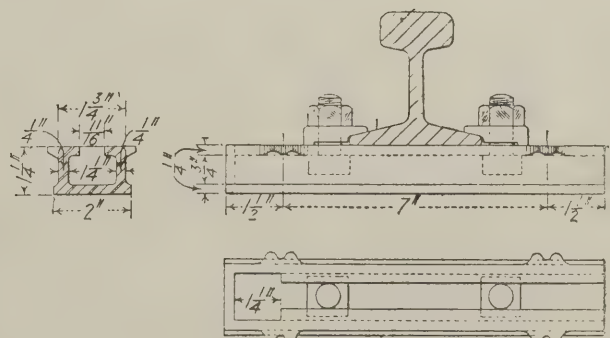


PLAN OF EXPANSION JOINTS

Details of Expansion Joints.



Details of Crane Bracket.



DETAIL OF INSERT FOR CRANE RAIL





WAREHOUSES AT NEW ORLEANS IN COURSE OF CONSTRUCTION.

(See article on preceding page.)

## MINISTRY OF MUNITIONS AND LEAD LICENCES.

The Minister of Munitions has issued orders that:

(1) No person shall as from the date hereof until further notice purchase, sell, or, except for the purpose of carrying out a contract in writing existing prior to such date for the sale or purchase of lead, enter into any transaction or negotiation in relation to the sale or purchase of lead situated outside the United Kingdom except under and in accordance with the terms of a licence issued under the authority of the Minister of Munitions.

(2) No person shall as from the date hereof until further notice purchase or take delivery of any lead situated in the United Kingdom except under and in accordance with the terms of a licence issued under the authority of the Minister of Munitions, or sell, supply, or deliver any such lead to any person other than the holder of such a licence and in accordance with the terms thereof; provided that no such licence shall be required in the case of any sale, purchase, or delivery of such lead.

(4) All persons shall within ten days from February 1, 1917, and within seven days from the first day of each succeeding month, send in to the Director of Materials (A.M.2.(E)), Hotel Victoria, Northumberland Avenue, London, S.W., monthly returns of:

(a) All lead held by them in stock or otherwise under their control on the last day of the preceding month.

(b) All lead purchased or sold by them for future delivery and not yet delivered on such last day, together with the names of the sellers to or purchasers from them.

(c) All lead delivered to them during the preceding month.

(d) All contracts or orders existing on the last day of or entered into during the preceding month requiring for their execution the use of lead for any purpose specifying the amounts of lead required weekly for the purpose of such contracts or orders and distinguishing between the amounts required for Classes "A" and "B" respectively of Circular L.33, and the amounts required for other purposes.

Notwithstanding the above no return is required from any person whose total stock of lead in hand and on order for future delivery to him has not at any time during the preceding month exceeded 1 cwt.

(5) For the purpose of this Order the expression lead shall mean pig lead, whether

virgin or remelted, sheet lead, lead pipe, and old and scrap lead, or any of them.

(6) All applications for licences to purchase or use lead shall be made to: The Director of Materials (A.M.2.(E)), Hotel Victoria, Northumberland Avenue, London, S.W., and marked "Lead Licence."

## THE CHARING CROSS BRIDGE.

A special general meeting was held at the Cannon Street Hotel, Mr. H. Cosmo O. Bonsor, the chairman of the South-Eastern Railway Co., presiding, to consider the Bill to empower the company "to alter and strengthen part of Charing Cross railway bridge, and for other purposes."

The Chairman observed that the directors regarded the matter of such importance, both to the customers and the shareholders of the company, that they had thought it wise to call a special meeting. The Bill was for strengthening Charing Cross bridge—a matter which was both urgent and necessary in the interests of the public. The bridge was built about fifty years ago, and was constructed to meet the demands of Parliament, who had insisted on the company's providing access to the West End of London and thus completing a system of railway accommodation for Kent and for the Continent. It had been discovered that it was feasible to meet the altered traffic conditions of the present day by strengthening the bridge instead of the more expensive work of widening it. They endeavoured to get the assent of all the parties using the Thames, but owing to the objection of the Wandsworth Gas Company an appeal to Parliament for powers became necessary. The Bill they introduced was thoroughly discussed in the House of Lords, who consented to it, but in the House of Commons, where they had not expected opposition, it had been thrown out on the second reading in a small House in circumstances which in his experience had never occurred before. There had been no public grievance; the objection appeared to have been that the South-Eastern Company had a bridge across the Thames and a terminus at Charing Cross. He did not hesitate to say that the throwing out of the Bill was a grievous injustice to the shareholders, and if the opposition persisted and were again successful an even more grievous wrong would be done to

the travelling public. The Bill before the meeting did not block any of the grand schemes which had been talked of for the past fifteen years, none of which, however, had been put forward in a concrete form or was, he believed, possible. Any of the schemes for removing the terminus and the bridge would take twenty years or more to complete, and would cost over £20,000,000. Practically every large town and every district in the county of Kent was in favour of the Bill, and they received a deputation of Mayors from all the principal towns in Kent, who stated that they would petition Parliament in favour of the Bill, and that if it got into Committee they would give evidence in support of the proposal. Having mentioned that the cost of strengthening the bridge as proposed was estimated at just under £170,000, he concluded by moving a resolution approving the Bill subject to such amendments as might be made therein during its progress through Parliament.

Sir David L. Salomons, Bt., seconded the motion, which was supported by several speakers, and was unanimously agreed to.

## NEW NATIONAL INSURANCE OFFICES AT KEW.

The new Claims and Record Office for Unemployed Insurance which has been erected on the plot of market gardens between Defoe Avenue and the River Thames at Kew is now nearing completion and a section of the staff of clerks are already at work. The offices will accommodate between 800 and 900 employees. This Department was, until January 15, administered by the Board of Trade, but it has now been taken over by the Ministry of Labour. Until now the work of administration has been split up into eight divisions, scattered over Scotland, Ireland, and the United Kingdom. Each division though complete in itself, was only a part of the whole, and the authorities found that the system involved a certain lack of uniformity. To obviate this, and to secure economy in administration, the building at Kew has been erected, and from it all the business of Unemployment Insurance will be transacted. The buildings in different parts of the country hitherto used for this purpose will be taken over by other Government Departments. The offices are built one-storey high and cover nearly two acres and a half.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

FEBRUARY 14, 1917.

71 HILL STREET, WESTMINSTER.

VOLUME 45. No. 1154.

It is with deep regret that we notice the death of Mr. Lisle March Philipps, who was without question the most graceful and quite the most popular of contemporary writers on architecture. Urbane and amiable to a degree, he inspired even his most strenuous controversial opponents with boundless admiration and respect. That, we must confess, was always our attitude towards him, even when we were in most vehement disagreement with his conclusions; and it will be recalled how completely he disarmed criticism when he read before the R.I.B.A. a paper that, though of substance it must have been obnoxious to every architect present, won over everybody to an intense enjoyment of the author's charm of manner and simplicity of expression. His psychology was somewhat gasperating. He could describe the Doric temple as "a visible incarnation of the spirit of intellectual acidity which was the expression of Greek life," and we saw in its structural forms, "each existing for the sake of the others, and gaining its individual consequence and beauty from its relation to the whole," "a visible expression of the language of art with a subtlety of articulation that months of analysis will not exhaust, the hatred of eccentricity and excess, the love of perfect symmetry and sweet reasonableness which were the governing principles of Greek philosophy."

He could speak, also, in full sincerity, of the Greek hatred of redundancy, the old instinct for making every stroke tell, the old recognition of all that the word unity implies from the first stone to the last," as "everlasting principles," to be assimilated through the study of Greek art. And yet, yielding his intellect to Greek, he gave his heart to Gothic! It was a fine intellect and a large heart; and, if he had not been cut off in the prime of life, Lisle March Philipps would have made a name for himself which not even the name of Ruskin would have overshadowed. His heresies, like those of Ruskin, are easily condoned because of his consummate mastery of the art of language, which made him easily the most interesting writer on architecture that this generation has yet seen. That this supreme gift was too often misapplied in the support of lost causes and exploded theses is perhaps a matter of subsidiary importance; the fact being that, among the laity, to whom his chief appeal was addressed, and among whom alone it found uncritical and perhaps negligible acceptance, his charming style was everything, his contentions vague and inconsequent.

Mr. John Fletcher Trew, who has died, after a long illness, at the age of sixty, exemplified to some extent the versatility which Mr. Ernest Newton has justly claimed for architects. This is fairly evident in the diverse character of the buildings for which his designs were premiated—public baths, municipal buildings, and a Wesleyan hall—but it is more strikingly evident in his general list of works, which includes not only clubs, schools, chapels, factories, and business premises, but also several schemes of drainage, and at least one scheme of water supply. It is not intended to infer that an architect should always be competent to undertake civil engineering work, but only to suggest that the general practitioner, working in a country

town, may find it less advantageous to specialise than, like his congeners the country doctor and the country lawyer, to be "armed and well prepared" to deal with very miscellaneous cases. Like the doctor and the lawyer, he will know when to call in the specialist; and it could be wished that this might be said with equal confidence of the civil engineer—or, for that matter, of the engineer of the other kind—with respect to consulting the architect.

It is heartening to note that the Municipal Council of Paris is steadily voting money for works of reparation. At a recent meeting it authorised the expenditure of 47,000 francs on repairs to the roof and interior of the communal building in the Rue de la Trinité, and 6,000 francs for the restoration of the tower of the church of St. Nicolas-du-Chardonnet. This news will probably come as a great shock to the London County Council, which in some senses is, and in others is decidedly not, akin to the Paris Municipal Council; the most conspicuous difference between the two bodies, at the present moment, being that the Paris Council knows how to spend wisely and the London Council does not; the former being able to distinguish quite clearly between economy and parsimony, the latter notoriously incompetent to make this important discrimination. In this respect the Council is merely English; for it is a national failing to be penny-wise and pound-foolish, and to be alike extravagant in our miserliness as in our expenditure. Real economy seems to be in the blood of the French, who pursue it not only keenly, but scientifically. Hence, at a moment when their financial stress is presumably far more stringent than ours, and when, too, they have at least an equal shortage of labour, they are nevertheless in a position to put in hand such work as, in our own country, is being systematically discouraged. Through our inability to organise on scientific lines our forces and resources, we are leaving undone a vast amount of building and other work that urgently demands attention, and would certainly get it if only we had the French virtue of economy. As it is, we are accumulating arrears that will ultimately exact heavy compound interest as the penalty of belated investment and unproductive "savings." That is not economy.

In nominating M. Henri Paul Nenot for the Royal Gold Medal, the Council of the R.I.B.A. achieve the double object of recognising the high merit of a most accomplished architect and of paying a graceful compliment to our gallant Allies. M. Nenot's work has been occasionally illustrated in our pages, and those examples demonstrate most convincingly, even to those who have not seen the actual buildings, the architect's incontestable qualifications for the distinction which the Gold Medal confers, and that, reciprocally, his name will add lustre to the list. His work at the Sorbonne, to take a familiar instance, stamps him as the legitimate heir to the best French traditions, and than this surely no higher claim could be advanced. That the award happens to forge another golden link in the international alliance is a coincidence that, though it is perhaps not altogether undesigned, is nevertheless of happy significance.



## THE JAPANESE MIDDLE-CLASS HOUSE.

IN Japan, a country which has not yet evolved the various social grades that are familiar to the West, it can hardly be said there is a middle class, "the backbone of the nation," such as we know in England; a vast lower-class and a select upper-class would be considered a general demarcation. Nevertheless, the rise of the third estate which Europe has witnessed is finding its counterpart in Japan, the middle class being constituted at the present day as a sort of fringe on the upper classes, into which the best of the lower classes are being progressively absorbed. The question as to which class any particular family belonged would probably be decided in Japan by the amount of income received, a family having, say, from 100 to 300 yen per month (about £240 to £720 per annum) being considered as belonging to the middle class, provided it was not that of a tradesman or a farmer, who appear to be regarded as a class apart. Of the houses occupied by the rising middle class in Japan, details are to hand in a recent issue of one of our exchanges, the "Japan Magazine," of Tokio, and thinking the matter of general interest to readers in this country we have made the following abstract:—

"The middle-class people live in houses that cost from 1,000 to 5,000 yen (£200 to £1,000), the former having about five rooms and the latter about ten. By reason of the frequency of earthquakes, Japanese houses seldom comprise more than two storeys; generally they are of one storey only.

"The entrance to the house is called the *genkan*, or vestibule, forming a place where the guests may remove shoes and wraps, and await welcome from the lady of the house. Here, also, hat and coat racks stand; and such things as overcoats are always removed before entering the guest-room. The guest is ushered from the *genkan* into the *zashiki*, or sitting-room, which is the room of ceremony, the chief room of the house. Another room is known as the *ōsetsuma*, a kind of parlour, often used as the guest-room. These two rooms, like the sitting-room and the drawing-room of European houses, are the two most important apartments in a Japanese house. The master of the house also has a room of his own, known as the *shujin-no-ima*, which he uses for the most part as a study, his books and writing-table being kept

there. Sometimes he may also entertain his most intimate friends in this room. The *fujin-no-ima*, or sitting-room of the mistress of the house, is another important apartment in the Japanese home. In this room the lady of the house keeps some chests and drawers, a kind of bureau containing her clothes. She uses the place both as a dressing and a sewing room. The room called the *cha-no-ma* corresponds to the Western dining-room; and may also be used by the mistress at times to receive unexpected guests of inferior rank, or her own relatives and more intimate friends. There are also *gejo-beya* for the maid-servants, and *shosei-beya* for dependents of the family, these latter usually consisting of two or three young men, whose duty it is to wait on the master of the house; they also act as servants to receive guests at the door. Another room, known as the *shafu-beya* is for the jinrikisha man, or porter. In addition, every house, of course, has a kitchen and a room set apart for the bath.

"As to furniture, the middle classes are as simple in their tastes as the upper classes. In the *cha-no-ma* there is the *hibachi* for making tea, a *tetsubin*, or pot for boiling water, and a tea cabinet for cakes and tea as well as the accompanying dishes. There is also a *tabakobon*, or tobacco tray, for the use of smokers, with its lump of live charcoal hidden in a brazier of ashes, and a tray for cigar or pipe ash. Bureaux may be found in any room for the reception of clothes and other articles belonging to the members of the family. A *nagamochi*, or long chest, is used for putting away garments not in everyday use. In the master's study there is a low table where he reclines when reading or writing, on which will stand his ink-slab and writing brushes, together with a roll of paper and a bunch of envelopes. There is usually a drawer or two in the table, called the *yodansu*, in which he may keep certain valuables. In this room also stand bookcases and there are also various ornaments.

"In a Japanese house there are no bedrooms, such. Any room may become a sleeping room for the time being, the beds, which consist of thin mattresses of cotton and comforters of the same material, being easily removed and stowed away for the day in cupboards, one of which there is in almost every room. There are also small cupboards for dishes and dining-room utensils, all of which likewise disappear when not in use. Chairs are not used to sit on, as in Western houses; the floors are covered with *tatami*, mats of straw about 4 in. thick, covered with fine matting, and on this floor the family sits, each with a *zabuton*, or cushion, about 2 ft. square, under him.

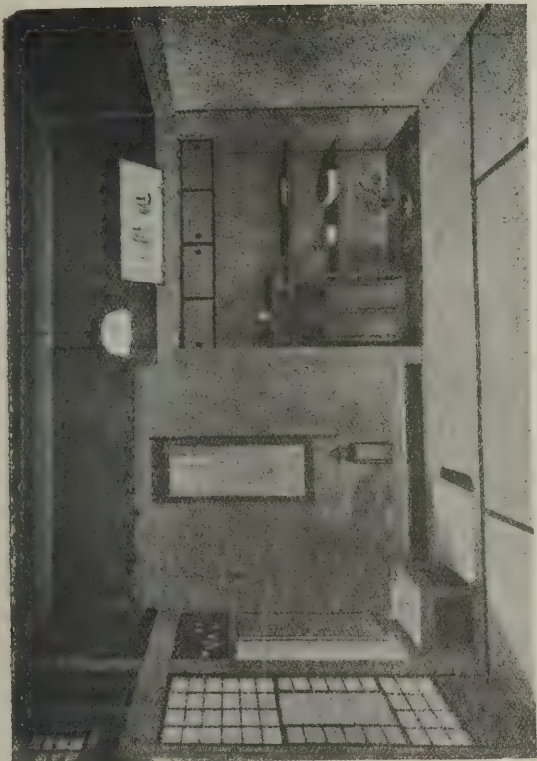
"The place of honour in the great-room is the *tokonoma*, a kind of recess in the wall, about 2 ft. by 6 ft. and 5 or 6 ft. high. It is said by some that in remote times, when the original houses had no floor, this was a kind of sleeping bunk, and by others that this was formerly the family altar-shelf, which used to contain an image of Buddha. At any rate, it is now regarded as the most sacred spot in the house, apart from the *kamidana*, or god-shelf; and the guest is asked to sit facing it, as the highest compliment that can be paid. But no guest must ever be so rude as to take this position without being invited to do so. In the *tokonoma* there usually hangs for ornament a beautiful *kakemono* by some famous artist, or a beautiful vase with a solitary flower or budding branch, or a spray of flowers. In some cases the ornaments on the floor of the *tokonoma* are fine bronze statuary, porcelain, or incense pots.

"In many cases there is a smaller alcove beside the *tokonoma* containing one or two shelves, the place being known as the *shoin*, and the shelves containing

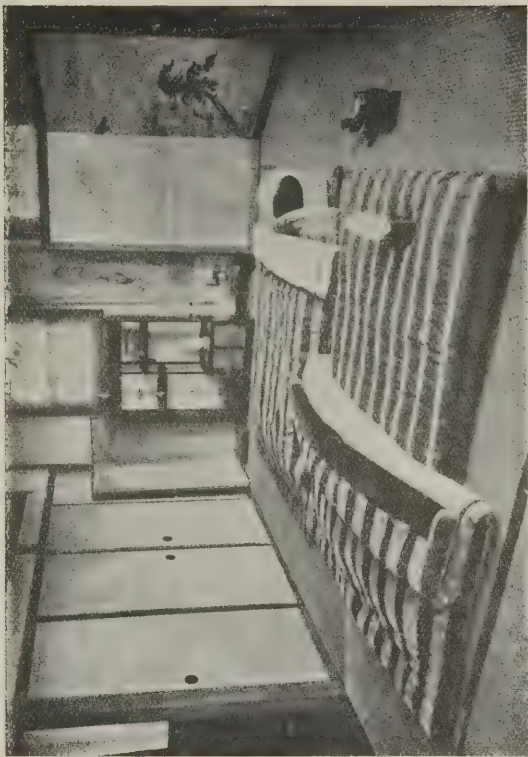


MAIN ENTRANCE.

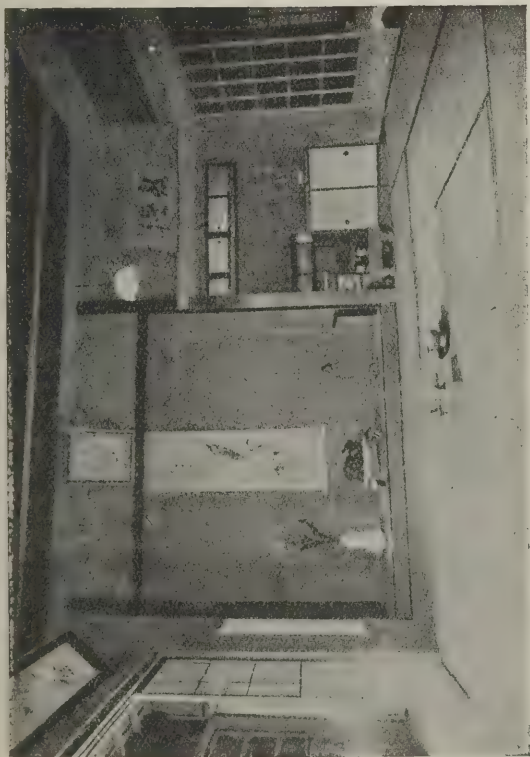




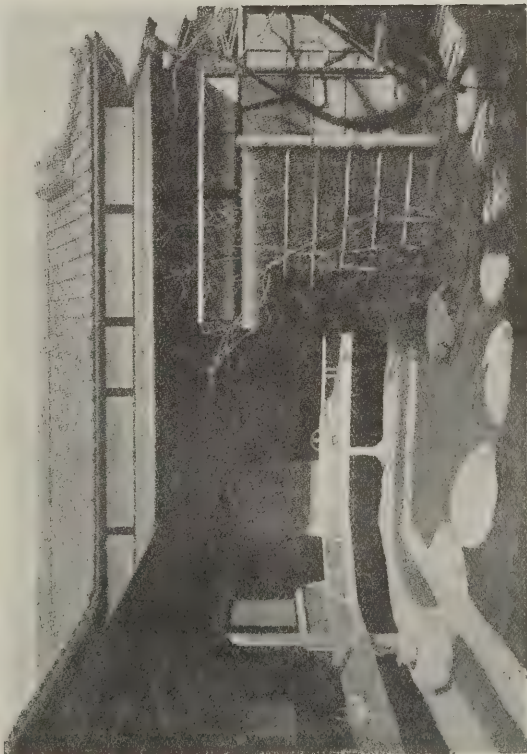
Small Sitting Room.



Bedroom.



Guest-Room with Tokonoma.



View from Garden.

A JAPANESE MIDDLE-CLASS HOUSE.



bronze or other ornaments. There is in the room also a shelf called the *nageshi*, on which is hung a tablet called *gaku* with an inscription on it—some example of calligraphy or motto. In the room are screens also, the *tsuitate* being a single standing screen of paper highly ornamented, and the *byobu* a double standing screen, the former being used to keep off the heat of a fire or to break a view, while the latter is used chiefly in bedrooms to keep off draught, and so forth. The pillars of the alcove, being made of beautiful wood, are an important feature of the composition. If the quality of the wood is inferior, a *hashira-kakushi*, or ornamental board, is placed against the pillar. The long pictures on pieces of thin paper which one sees with the signature of some artist of the Tokugawa era were originally painted for this purpose.

"Every Japanese house occupied by middle-class people has a more or less extensive garden, either in front of the door to form an artistic approach, or at the back part facing the guest room, or both—usually in both places. The space from the gate to the front door is usually paved with granite, with pine trees, maples, or cryptomerias on either side, and a stone lantern on one side. The plots with shrubbery are usually railed in with bamboo fencing. In modern



BATHROOM.

times some of these front gardens are made after Western style, having floral borders, and so on. The inner garden is, however, the most important, and is nearly always in Japanese style.

"As the summer is more severe than the winter in Japan, the houses are more adapted to keep out the heat than to keep out the cold. Consequently most of the side of a Japanese house can slide out of place, and so open the whole room to the outside air. There is, therefore, always a harmony between the rooms of the house and the surrounding garden; the one is made for the other. It would be too great an undertaking to attempt here any explanation of the principles of Japanese gardens. Let it be sufficient to say that every pathway, hill, tree, rock, and waterfall has its conventional position and task in relation to the house.

"Approached from the end of the veranda is the toilet-room, with the *sode-gaki*, or sleeve-fence, to render it inconspicuous.

"In the garden there is usually a pond with its gold fish, and crossed by a miniature stone bridge. If a stream can be got to flow through the garden so much the better.

"Around all the rooms runs a veranda with smooth boarded floor, from which the garden is viewed."

How strange a contrast between the Japanese house and the English house!—in nothing perhaps more marked than the almost entire absence of movable furniture in the one and the superabundance of it in the other.

## CORRESPONDENCE.

### *Heat-retaining Effect of Plaster.*

To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIRS,—I am engaged on behalf of the Committee on Fuel Economy of the British Association in making investigations on the consumption of fuel for domestic heating and other purposes with a view to economising the national resources. One branch of this investigation has as its object to determine forms of building construction which will reduce the loss of heat through the walls of a dwelling-house. In this connection I am endeavouring to compare the heat-retaining effect of different kinds of plaster applied to the inner surfaces of walls.

There must be many inexpensive compositions known to some of your readers which would probably produce a great effect in this direction. I write, therefore, to ask any such persons who are interested in this most important national problem and who are in a position to submit suitable samples to communicate with me at the University College.

We have erected in the laboratories here an apparatus capable of making tests of the exact effect of such plaster, and I should be prepared to submit any samples sent to me to that test if it appeared to offer any prospect of success.

May I request you, therefore, to ask any of your readers to give us their assistance in this nationally important matter?

ARTHUR H. BARKER.

Department of Heating and Ventilating Engineering, University College, London.

### *Elementary School Buildings.*

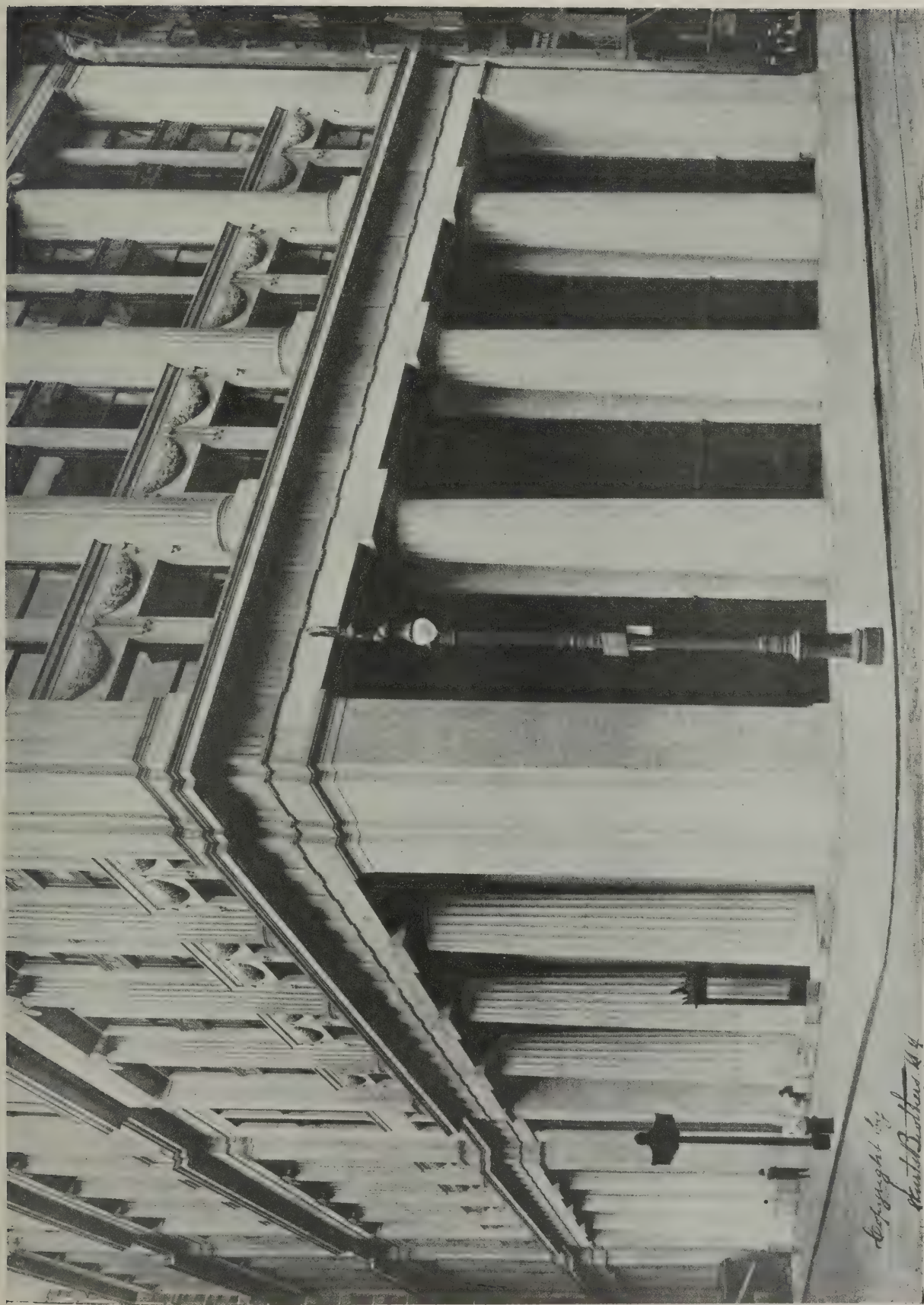
To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIRS,—Your observations, in your issue of February 7, on the design of the elementary school buildings of London, are, I think, entirely just. It is, I am sure, a great mistake to have such buildings all designed to the same pattern under an official architect, no matter how capable and competent he may be. As you say, the London County Schools are of admirable type, but there is no reason whatever why that type should be monotonously repeated, nor why the impress of one man's mind should be stamped on every district of a large town. You have always held, I believe, that an official architect should not be required to design, but should be left free to gather and impart the data—mainly of a practical character—upon which design, and more particularly planning, may be based. In other words, he should be a consultant rather than an executive official. It is not to be denied that an official architect is in a position favourable to the accumulation of valuable experience, and to acquiring intimate knowledge of what is needed; but while this is an excellent reason for retaining him in an advisory capacity, it does not justify his being employed to turn out buildings wholesale to a preconceived and more or less uniform pattern. Tennyson, if I remember rightly, expresses a fear "lest one good custom should corrupt the world." It is far easier for one good custom to corrupt a town; and I feel that education committees ought to avoid the impression that their elementary schools commonly give of having been built from stock designs. Such work ought always to be done in competition, open or limited; or, at all events by architects who are free from the official fetters.

G. A. V.

London, S.E.





MODERN AMERICAN ARCHITECTURE (SERIES II.). XXVII. - TELEPHONE AND TELEGRAPH BUILDING, NEW YORK: DETAIL AT CORNER OF  
BROADWAY AND DEY STREET.

WILLIAM WELLES BOSWORTH, ARCHITECT.







MODERN AMERICAN ARCHITECTURE (SERIES II.). XXVIII.—TELEPHONE AND TELEGRAPH BUILDING, NEW YORK:  
SUMMIT OF TOWER.

WILLIAM WELLES BOSWORTH, ARCHITECT.



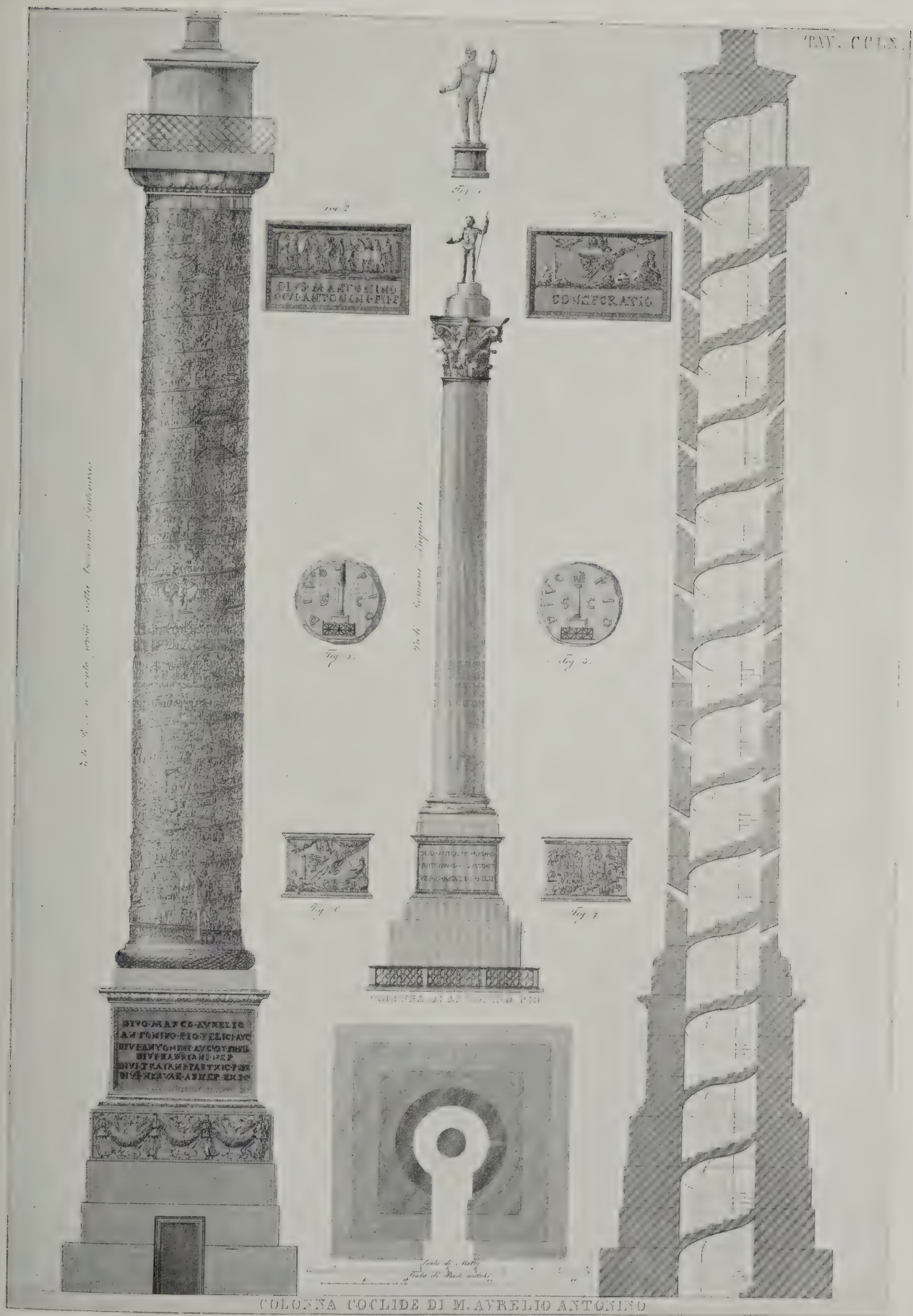




MODERN AMERICAN ARCHITECTURE (SERIES II.). XXIX.—TELEPHONE AND TELEGRAPH BUILDING, NEW YORK :  
ENTRANCE LOBBY FROM BROADWAY.  
WILLIAM WELLES BOSWORTH, ARCHITECT.







COMMEMORATIVE COLUMNS AND OBELISKS. II.—COLUMNS OF MARCUS AURELIUS AND ANTONINUS PIUS, ROME.  
(From Canina.)





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MONUMENTS. XXVII.—MONUMENT TO  
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ARVEY AND HUTT IN WESTMINSTER ABBEY.  
SCULPTOR.





## THE PLATES.

*Telephone and Telegraph Building, New York.*

THE façade of this new building, which occupies a site at the corner of Broadway and Dey Street, New York, is composed of nine Orders, Greek Doric being used for the lower Order and Ionic for those above. The columns are so spaced that the two bays nearest the centre are wider than the two end bays, which arrangement produces a slight effect of curvature in the façade, further emphasised by an actual curvature of the skyline (in accordance with the precepts of Professor Good-year). Each Order diminishes in diameter as the building rises, and each is set back from the one below it. There are three-storey heights in the Ionic Orders, the two upper storeys being joined by metal spandrels, and the lower one separated by a solid base of masonry which gives rigidity to the columns. The offices within the building are stated to be abundantly lighted; the columns projecting beyond the wall surface do not obstruct the view or the light. A wing to Fulton Street provided administration offices which could be lighted on three sides, and to this wing there is a tower thirty storeys in height, surmounted by a stepped roof, supporting a gilded bronze figure of Electricity, 20 ft. in height. A photograph of this interesting feature of the building is reproduced on the plate, and shows the Woolworth Building adjacent. The masonry is of fine white granite, the metal-work of bronze. For the lobbies Botticino marble and bronze have been used. The woodwork of the chief executive offices is of Italian walnut. The corridors are lined with Alabama marble, and have marble mosaic floors. There are five storeys below ground containing plant

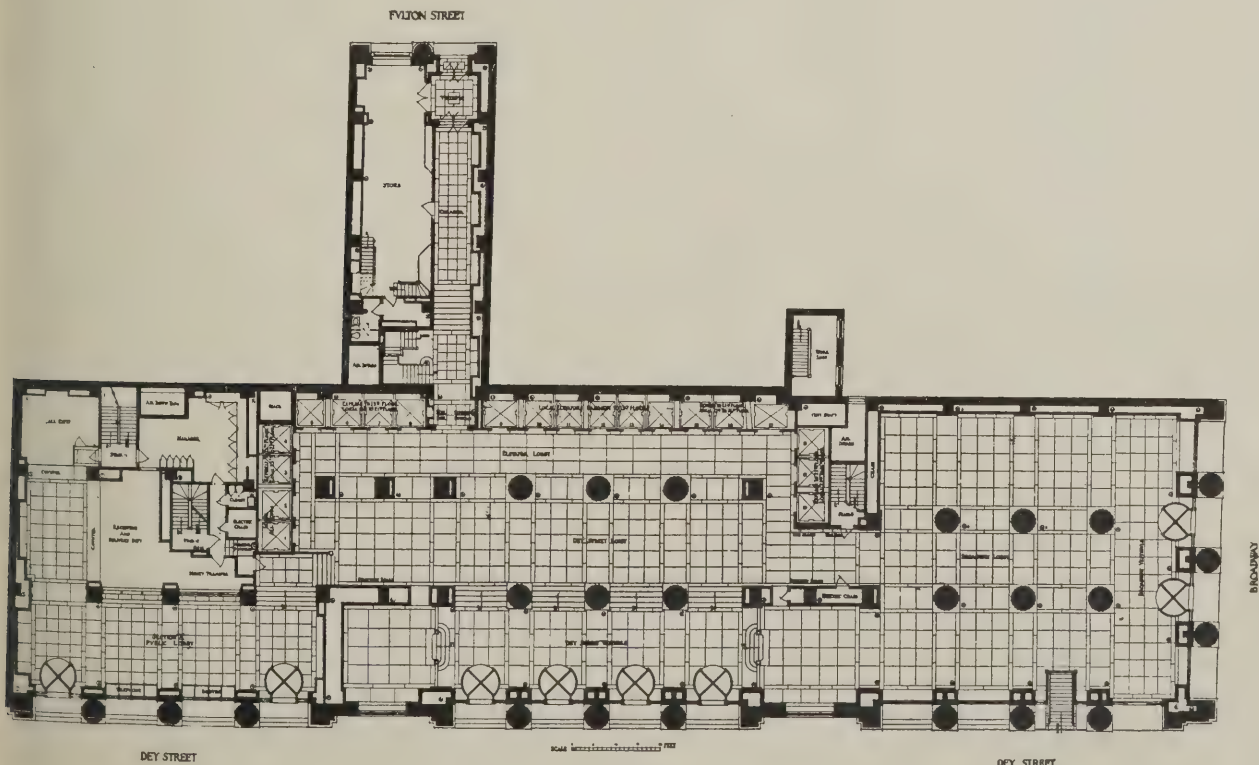
for heating, lighting, power, ventilation, refrigeration, and vacuum cleaning. Mr. William Welles Bosworth was the architect. Our illustrations are taken from "Architecture," New York.

*Column of Marcus Aurelius, Rome.*

The Column of Marcus Aurelius commemorates the victories of that Emperor over the Marcomanni and other German tribes on the Danube. A statue of the Emperor originally surmounted it, but this was replaced by one of St. Paul in 1589, when the column was restored by Fontana and his nephew, Carlo Maderno, at the instance of Sixtus V. The shaft, comprising twenty-eight blocks of white marble, is of exactly the same height as that of Trajan's Column, but the pedestal is much higher; the total height is 137 ft. Sixtus V., when restoring this column, inscribed it in error to Antoninus Pius. This latter is also shown on the plate. It is a much smaller and less ambitious work.

*Monument in Westminster Abbey.*

At the western end of the nave of Westminster Abbey, below a window on the north side, is the beautiful national monument to Captains Harvey and Hutt, two naval captains who were killed in Lord Howe's action against the French off Brest in 1794. This monument is by John Bacon, jun. It displays none of the cold classicalism which characterises the monuments of the Greek Revival period, but possesses a Roman richness and warmth, allied to grace of form and subtlety of execution. The supporting figures are very happily conceived, and the vase bearing a medallion of the profiles of the two gallant captains is a crowning feature of much elegance.



Ground-Floor Plan.

TELEPHONE AND TELEGRAPH BUILDING, NEW YORK. WILLIAM WELLES BOSWORTH, ARCHITECT.



## LEGAL.

## Light and Air Dispute.

*Beddington and others v. Willmott and Sons and another.*

January 31. King's Bench Division. Before Mr. Justice Bailhache and a Special Jury.

This was an action by the trustees of the late Mr. Moses, deceased, the owners of 7, Great St. Andrew Street, Shaftesbury Avenue, London, against Messrs. J. Willmott and Sons, builders, and Thomas Gordon, London, Ltd., of 63a, Vincent Street, Glasgow, claiming an injunction and for damages by reason of the interference of the plaintiffs' ancient lights by the erection of a building opposite by Messrs. Willmott for Messrs. Gordon, Ltd.

Plaintiffs are freeholders of premises opposite the building erected by the defendants, the Shaftesbury Hotel. Plaintiffs' shop and building are used as a picture-frame and print shop and for residential purposes, and plaintiffs complained that the defendants had raised the height of the Shaftesbury Hotel from 46 ft. 6 in. to 67 ft. 3 in., with the result that the light coming to the basement, shop, passage, staircase, and front room on the first floor, used for residential purposes, was obstructed and diminished to an extent to interfere with the ordinary comfort and user of the premises.

Defendants, by their defence, said the plaintiffs were well aware of the erection of the building and allowed the same to be erected without complaint or interference. The raising of the height of the building was not unknown to the plaintiffs. The defendants further pleaded that there was no interference here with the plaintiffs' ancient lights and that the raising of the building caused no nuisance to the plaintiffs, the road being 30 ft. wide and the locus in quo near two large open spaces. In the alternative defendants said if there had been any interference with the light, which they denied, the same could be met by the payment of a small sum of money as compensation.

Mr. Kerly, K.C., and Mr. E. G. Palmer appeared for the plaintiffs, and Mr. Compston, K.C., Mr. Maddock, and Mr. Robertson for the defendants.

Mr. Kerly opened the case and said the question for the consideration of the jury was whether there was a material diminution of the light to the premises so as to interfere with the ordinary comfort and user of the premises.

Expert evidence was called to prove loss of light and consequent reduced rental value to the extent of from £25 to £30 a year.

Mr. C. S. Joseph, of Messrs. C. S. and E. M. Joseph, architects and surveyors, of 83, Queen Street, E.C., gave evidence that there was material diminution of light to the premises. He estimated the loss in letting value at £25 a year. The loss on the site value on the 5 per cent. table he put at £375, or £262 if the lease ran to 1929. On the 6 per cent. table the amount would be £192. In his opinion the premises were worth more than £100 a year before the defendants' buildings were raised.

Mr. Goodstein, the tenant of the premises and lessee, said he left all the matters relative to the building to his solicitors, and they should have informed the freeholders of the matter. Witness received £150 from defendants, but he had to pay certain costs, which amounted to some £100.

Mr. H. A. Furber, of Messrs. Furber, 3, Warwick Court, Gray's Inn, auctioneers

and surveyors, agreed with the evidence of Mr. Joseph, and supported his figures. Having inspected the premises he came to the conclusion that the defendants' building had caused a substantial diminution to the light, and interfered with the comfortable enjoyment of the premises and had diminished their former value for business purposes.

His lordship inquiring how witness came to the conclusion that the loss of rent was £25 a year, Mr. Furber replied: "From experience of dealing with properties."

Mr. Compston: What do you put the site value at?

Mr. Furber: I put the site value at rs. 6d. a foot all over. There is 1,400 ft. here and that would represent a site value of about £105.

Mr. Wm. Woodward, senior partner of Messrs. W. Woodward and Sons, architects and surveyors, of Southampton Street, Strand, W.C., said in his opinion there was a material diminution of light to the plaintiffs' premises by reason of the building opposite. The street was 36 ft. wide, building to building. The light to the parapet of the old building (excluding the roof) was 32 ft., and that of the new building to the parapet 59 ft. 6 in. a difference of 27 ft. 6 in. Taking these figures into consideration he was of opinion that his conclusion as to loss of light was indisputable. He put the loss of rent at £30 a year.

This was the plaintiffs' case.

Mr. Compston, for the defendants, Messrs. Willmott, said this was an utterly exaggerated claim. His clients did not dispute that there was a loss of light, but his case was that the loss was not such as to justify large damages. The result of the erection of the hotel and the improvement in the neighbourhood would be to command a better rent for the shop, and the little loss of light would make no difference whatever to the property.

Mr. W. M. Matts, an architect and surveyor, of Staple House, Chancery Lane, W.C., examined, said he was acquainted with the district in which the plaintiffs' house was situated. He had known the district before the erection of the Shaftesbury Hotel. He was the architect for the erection of the hotel at a cost of £23,000. In 1914 it was necessary to extend the hotel premises, and he was the architect for the extension. Nos. 41, 42, and 43, Great St. Andrew Street had been pulled down for the purposes of the extension. In his opinion the plaintiffs had a sufficient amount of light left to their premises, notwithstanding the erection of the extension of the hotel.

Mr. B. J. Breach, surveyor and estate agent, and a member of the firm of Messrs. Fairbrother, Ellis and Co., of 29, Fleet Street, gave evidence to the effect that by reason of the erection of the defendants' building the letting or selling value of the plaintiffs' premises had not depreciated, but, in fact, had appreciated in value. He thought that since the erection of the defendants' building a sufficient quantity of light was left to the plaintiffs' premises for all the ordinary purposes of business or occupation. He put the site value at £2,000 and agreed with the value of the site stated by Mr. Furber, viz., 1s. 6d. per foot.

Mr. H. Bloss Taylor, surveyor, of Messrs. Browett and Taylor, 9, Warwick Court, W.C., also gave evidence. He visited the premises in September last. There was sufficient light on the ground floor for all purposes of business and on the first floor for all ordinary purposes. The premises were reasonably lighted and the site value

had not decreased, but, if there was any difference, had appreciated.

Counsel then addressed the jury, and his lordship summed up the case.

The jury returned a verdict for the plaintiffs and assessed the damages at £150.

His lordship entered judgment accordingly against both defendants, with costs.

## Building Contractor's Claim.

*England v. Yates.*

February 2. Official Referee's Court. Before Mr. Pollock.

In this case Mr. Joseph England, building contractor, of 38, Eaves Street, Blackpool, Lancashire, claimed from Mr. Wm. Yates, of King George Avenue, Blackpool, £2,626 5s. alleged to be due upon certain building speculations. Of the total claim £29 13s. was for work done and materials supplied by plaintiff as a builder on defendant's property at Warbreck Hill and King George Avenue, Blackpool, £550 for plaintiff's share of profit on thirteen houses erected by him at Warbreck Hill, £45 for commission on the purchase of land at Warbreck Drive, King George Avenue, Cornwall Avenue, and at Watson's Lane, South Shore, Blackpool, and £2,001 12s. for work done and materials supplied as builder on the defendant's property at King Edward's Avenue. Plaintiff also asked that an account should be taken of all moneys due from defendant to plaintiff and for damages for breach of service.

The defendant denied liability in respect of the majority of the items, alleging that the plaintiff had not carried out his contract in respect of which he counter-claimed.

Mr. Atkinson, K.C., with Mr. Oliver were for the plaintiff, and Mr. Kemo, K.C., with Mr. J. W. Saul, were for the defendant.

Mr. Atkinson, K.C., in the course of his opening of the plaintiff's case, said that June, 1913, the defendant was introduced to him. Mr. Yates, who had been speculating in building land, said he wanted secure sites in or near Blackpool, and (counsel alleged) suggested that plaintiff should find the sites and build houses at cost price, after which they would share the profits on the sales, plaintiff to take one-third. As a result the defendant purchased the land at Warbreck Drive, and upon were built thirteen houses at a cost of £6,000 each and it was said that they would probably be sold for £600 each. The defendant, said counsel, admitted £1,104 coming on the credit side, but subject to set-off. The counter-claim included amount said to have been paid for work unfinished, but plaintiff said that he had been prevented from completing the work.

Mr. Joseph England gave evidence in support of his claim, and a large number of witnesses were called on both sides, hearing occupying thirteen days.

The Official Referee, in giving judgment, said that upon the evidence he had come to the conclusion that the land upon which the plaintiff claimed commission had been purchased for the defendant by Mr. Whittaker and not by him, and the evidence was not sufficient to support claim to a share of the profits upon the sale of the eleven houses built by him. If such an arrangement as that suggested had been made, he would have expected to see mentioned in the contract, but there was no mention whatever of the profit that was to be made out of the transaction, and without hesitation he came to the conclusion that there was no arrangement that plaintiff should receive a third of the profits. After dealing in detail with the evidence as to the several contracts between



parties and the accounts, the Referee said that he arrived at the conclusion that the sum of £1,904 11s. 3d. was due to the defendant, and that the sum of £1,815 9s. 8d. was due from defendant to plaintiff. He therefore gave judgment for the defendant for the balance (£89 1s. 9d.) with costs. Judgment was entered accordingly.

#### Decision of Reservoirs: Contract Dispute.

*Nott v. Lord Mayor, etc., of Cardiff.*

February 6. King's Bench Division. Before Justices Bailhache and Atkin.

This was a motion by the Cardiff Corporation to set aside an award of Mr. Ed. Sandeman, who acted as arbitrator in a contract dispute between the Corporation and the executors of the late Mr. Louis Philip Nott.

The contract related to the construction of a reservoir and subsidiary buildings at Taff Fawr Valley, Brecon. The contract price was over £200,000 and the dispute related principally to the question of "extras," the Corporation submitting that the findings of the arbitrator were not justified.

Mr. Holman Gregory, K.C., and Mr. Bruce Thomas appeared for the Cardiff Corporation, and Mr. Walter, K.C., and Mr. H. Sylum, jun., for the respondent.

After hearing full arguments, the Court dismissed the motion.

Mr. Justice Bailhache, in giving judgment, said in November, 1910, the Corporation entered into a contract with Mr. Nott, but the work was suspended after the war started. Difficulties arose about certain work, the main dispute relating as to whether certain items were rightly described as "extras" or not. The result was that Mr. Nott sent in a claim specifying some twenty-one items in respect of which he claimed extra payment as to all of them, except one (a claim for alleged delay). Altogether he claimed £34,900, and the arbitrator allowed him nine claims, awarding the sum of £12,360. In the contract there were very elaborate and careful conditions designed to safeguard the Corporation against claims for "extras," and the Corporation's case was that the "extras" in question could not be properly allowed. Not being satisfied with the arbitrator's award the Corporation now asked the Court to set it aside or send it back for amendment. The learned judge added that he was quite satisfied that there was evidence supporting the findings of the arbitrator, and with regard to the engineer, his lordship thought there was evidence given before the arbitrator upon which he might find as he did. The result was that this motion by the Corporation failed and must be dismissed, with costs.

Mr. Justice Atkin concurred.

#### "CIVIC WEEK" IN DUBLIN.

Dublin Civic Week, which has just come to a conclusion, has aroused a great deal of public interest. The exhibition of the competitive designs for the town planning of Dublin at the Chamber of Commerce was visited by large numbers, the attendance including many representative men in the civic and commercial life of the city.

A lecture, illustrated by lantern views, was given in the Chamber of Commerce under the auspices of the Civics Institute, by Professor L. P. Abercrombie, M.A., A.R.I.B.A., Liverpool University, the subject being, "Should Dublin be Town Planned?"

Professor Abercrombie pointed out that the scheme for the replanning of Dublin

was not meant to be a final design for the city. It put forward suggestions upon which the final planning of Dublin might proceed. One must not say, he explained, that because of a single plan they wanted to saddle Dublin at once with the enormous expense of constructing a great many new roads and other similar features. What it really meant was that as Dublin increased in population and prosperity certain main lines should be adhered to and by having a plan they were able to decide what directions certain types of growth should take. For example, they could put certain areas aside for industrial purposes, and prevent cottages being put on them, so as not to obstruct industrial efficiency for the future. Then the question of transport over railways, water, and canals ought to be considered in conjunction with great new schemes for housing reform. The scheme, said the lecturer, was confessedly thought of in a moment of enthusiasm. It was started in 1914, before the war, when Home Rule was expected to come in, and when an era of prosperity was also expected in Ireland, or at any rate in Dublin, the capital of the country. Therefore, the scheme as put forward suggested a growing, prosperous town, with new industries springing up, and a necessary remodelling of its machinery taking place.

A discussion on housing was held at the Chamber of Commerce, with Sir Wm. Byrne, Under-Secretary for Ireland, in the chair. The opening speaker was Mr. W. Kaye Parry, president of the Royal Institute of Architects of Ireland.

It was proposed to call a special meeting of the Dublin Corporation to rescind a resolution passed with regard to the widening of Earl Street. The Council's decision to widen the street by only three feet has aroused much public comment and widespread dissatisfaction. On the amendment moved by Sir Jos. Downes in favour of the three feet extension the voting was 23 for and 20 against. This represents only a little more than half of the membership of the Council.

The Lord Mayor, interviewed by a representative of the "Freeman," said he was astounded at the want of public spirit and civic pride displayed in the decision. "I believe," said his lordship, "that the widening of the street would confer a great boon upon the city. The original scheme had the approval of the most eminent architects in Dublin, as well as Mr. Unwin, whose services were placed at the disposal of the Reconstruction Committee by the English Local Government Board and the Ministry of Munitions. I have only one object in view in connection with the scheme, and that is that the destroyed area should be rebuilt in a manner which will be a credit to the City of Dublin. It would be a great pity, after the municipal authorities having obtained a special Act of Parliament and powers which no other municipal body in the United Kingdom possesses, if the advantages of the Act were not availed of in the widening of the thoroughfare."

Mr. J. D. Nugent, M.P., T.C., interviewed by a representative of the "Freeman," is reported as saying that he regretted the decision arrived at by the Corporation, and hoped that it would be rescinded. He pointed out that the widening of North Earl Street by three feet was not sufficient, because two trams would not be able to pass through the thoroughfare. By their action the Corporation was losing an opportunity of making North Earl Street sufficiently wide to cope with the traffic passing through it, and one day the Municipal Council would

be faced with the problem of making the trams at present going through North Earl Street pass through Abbey Street. As a consequence of this diversion North Earl Street would suffer from the business point of view. At present, he continued, the majority of the people going to Fairview or Clontarf had to cross by Nelson's Pillar; but if the street were sufficiently wide they would join the trams at North Earl Street, and that would be a great advantage to the public, who in the same way would leave the tram at that point.

Alderman James Moran, Chairman Dublin Port and Docks Board, stated to a "Freeman" representative that the decision of the Corporation was, in his opinion, a most regrettable blunder. Dublin had now an opportunity of widening Earl Street and making a splendid thoroughfare at the minimum of expense. That portion of Earl Street from the Pillar to Nelson Place was the most congested street in Dublin, and he felt sure that the decision of the Corporation was repudiated by the citizens.

#### DURABILITY OF STUCCO AND PLASTER.

In conjunction with the Associated Metal Lath Manufacturers the United States Bureau of Standards undertook, in 1911, exposure tests of metal laths plastered with various metals, mainly for the purpose of determining the best methods of construction to ensure the protection of the metal from corrosion. These tests, which are still in progress, proved that painted or preferably galvanised lath, embedded in dense, water-resisting plastering material, would not corrode. At the same time, some plastering materials were in themselves found defective, of course, and the manufacturers of lime, cement, gypsum, hollow tiles, metal laths, etc., suggested a conference of interested parties. As a result, a committee was appointed in 1914, consisting of members of the Bureau, of representatives of the Supervising Architect's Office of the Treasury, of the American Concrete Institute, of the industries and, further, of three experienced contracting plasterers. A test structure, 200 ft. long, 26 ft. wide, and 24 ft. high, was erected in the Bureau grounds, and fifty-six stucco panels, each about 15 ft. by 10 ft., were prepared, the building serving for the exposure of the panels and for the erection of plaster walls and partitions. When the panels were examined, in April, 1916, after six months' exposure, only two panels were found entirely free of cracks; 40 per cent. of the panels were considered satisfactory, but the majority were more or less deteriorated. The tests were rather discouraging, therefore, but it must be stated that in the panels a smooth type of finish, commercially known as "sand-float finish," had been employed, which is more likely than the usual rough type of finish adopted by builders to bring out any superficial defects. The report contained in Technologic Paper No. 70, which was drawn up by Messrs. R. J. Wilg, J. C. Pearson, and W. E. Emley, does not draw any general conclusions, in view of the necessity of further experimental work. No recommendations are offered for stucco construction. The forms and construction of the stucco specimens examined and their present condition are described, however, and it is intended to issue a further report dealing in particular also with various stucco structures which have been standing for five or more years.



## ARMY CONTROL OF TIMBER.

Following the control of steel, lead, and other metals by the Ministry of Munitions, the Army Council has now assumed control of all timber stocks in this country. The position is set forth in the following circular letter to timber merchants:—

War Office, London, S.W.

Gentlemen.—I am directed to refer to the communiqué published in the Press on the 5th instant, and to state that the Army Council has assumed control of all stocks of soft wood, planed and unplaned, excluding pitprops, in the United Kingdom. It has been necessary to take this step owing to the urgent necessity of safeguarding essential supplies of timber for military purposes, and in view of the growing scarcity of tonnage it is imperative that existing stocks of wood should be conserved to the utmost and that no wood should be consumed for any purpose not essential or where any substitute for wood can be utilised. To this end the War Department asks the loyal co-operation of all timber merchants as well as consumers of timber.

The effect of the Order is to give the Department possession of all stocks of such wood and to require present holders to act in accordance with the instructions of the Department in regard to the custody and disposal of the stocks under their control. I am therefore to require you, pending further regulations which will be drawn up in consultation with the Timber Trades Federation, to observe the following conditions:—

- (1) You are permitted to continue to make deliveries until further notice under existing contracts.
- (2) You are permitted to sell lots of under one standard at your discretion provided that the price does not exceed that current for similar transactions during the week ended January 31, 1917, and provided that you are satisfied that the wood is required for urgent civilian needs.
- (3) You are permitted to enter into fresh contracts for one or more standards for sale at prices not exceeding those current during the week ending January 31, provided—(a) that you obtain a certificate in the form attached from the intending purchaser; and (b) that in regard to wood for other than Government purposes that you are satisfied that the wood is actually required for work of national importance. In cases of doubt you should refer to the Director of Army Contracts at Imperial House, Tothill Street, S.W.
- (4) Holders of wood of the above description are permitted to use in connection with their own business such quantity as they now hold, but not to dispose of such stocks except in accordance with the above conditions.
- (5) You will keep records of all transactions in such wood as from this date, which shall be open to inspection by any officer of the Department or by any person authorised for the purpose.
- (6) Applications for licences to buy and sell and to offer to buy and sell soft wood, excluding pitprops not in stock in the United Kingdom, should be addressed to the Director of Army Contracts, at Imperial House, Tothill Street, S.W.

The Department feels confident that it may rely upon you to act loyally in the national interest and to co-operate in carrying out such measures of control of the

distribution and consumption of wood as may be decided to be necessary.—I am, Sir, your obedient Servant,

A. F. WINTOUR,

Director of Army Contracts.

The form of certificate sets forth that the timber specified is required either for a Government contract or for work of national importance. The latter may provisionally be taken to include:—

- (1) Work undertaken by private persons or bodies which is directly or indirectly on behalf of a Government Department, or work which has been recognised as necessary by a Government Department.
- (2) Urgent repairs to public or private buildings or streets where necessary for the health or safety of the public.
- (3) Packing cases to contain goods for export.
- (4) Packing cases or other wood required for the supply or distribution of food and other articles essential to the needs (as opposed to luxuries) of the population.

## WONDER OF WORK IN WAR TIME.

An appreciative audience filled the Carpenters' Hall on Wednesday evening last, when Mr. Joseph Pennell lectured on "Wonder of Work in War Time." Going back to the early history of the world, Mr. Pennell told how the wonder of work started with the buildings of the Assyrians. Then followed the wonder work of the Greeks and the Romans, and coming to later times he reminded his audience of the wonder work of the Dutch in the building of those familiar landmarks, windmills, which now stood side by side with the great steel works on the Continent. He dwelt with much emphasis on the picturesqueness and beauty of these latter-day wonders of work—monuments of human industry. There was wonder work in our harbours and in all the commercial industry of our own time. To prove that there was beauty in wonder work, Mr. Pennell showed many slides illustrating the paintings of Turner, while Whistler's etchings were cited as incomparable in showing the beauty and wonder of work.

Mr. Pennell said he was a strong advocate of putting up in our buildings to-day panel illustrations of our wonder of work as evidenced in the steel works and ship-building yards and other commercial enterprises.

But it was to America that we must look for the greatest wonder of work. The Woolworth building was a marvel of ingenuity of wonder work. Then there was Pittsburg, with the "spires" of its steel works. The Panama Canal was a crowning wonder of work, its locks, gates, and excavations being marvellous.

The industrial wonders of work of Peace time were now turned into wonders of work of War time, and they were things which ought to be preserved.

### Dublin Housing.

A requisition has been presented to the Lord Mayor of Dublin asking him to summon a conference to consider the question of housing in the city with a view to preparing a plan for its solution at the end of the War. The requisition bears the signatures of the two Archbishops of Dublin, Sir Edward Carson, the six members for the City and County of Dublin, the Recorder of Dublin, and others.

## NEWS ITEMS.

### Change of Address.

The offices of Mr. J. H. McGovern Licentiate R.I.B.A., are now at Westminster Chambers, 1, Crosshall Street, Liverpool.

### Proposed Statue to Mr. William Willett.

Colchester Town Council has resolved to erect a statue to Mr. William Willett, originator of daylight saving and a native of Colchester. The cost will be borne by Alderman Watts. Mr. Willett's eminence and peculiar ability as a builder will have been forgotten.

### Glasgow Architect for Belfast Cathedral.

Mr. Macgregor Chalmers, architect, Glasgow, whose work as a church architect and student of ecclesiastical antiquity is well known in Scotland, has been appointed architect for the cathedral church of St. Anne, Belfast.

### Fibrous Plaster Work.

Messrs. Tanner and Son, of London and Liverpool, have been entrusted with the whole of the fibrous plaster work at the British Bank of West Africa (Seymour, British New Guinea), also at their branch bank at Manchester (Messrs. G. W. Holt, architect).

### War Memorial for Keyingham Church.

A faculty has been granted in the York Consistory Court to the vicar and churchwardens of the Parish of Keyingham to erect an oak reredos and side panelling the east end of the chancel of the church bearing the inscription: "To the Glory of God and in memory of the men who fell in the great war, 1914."

### Women Carpenters for France.

Twenty women carpenters, who have gone to build soldiers' huts in France, are about to advance party for the many other women who are anxious to help the Army in this first-hand manner. The women who have undergone a special course of training, left Charing Cross last week. A housekeeper and a "social supervisor" are included in the party.

### Converting an Ordinary School to an Open-Air School.

With reference to the article which appeared on p. 38 of our issue of January 17, entitled "Converting an Ordinary School to an Open-Air School," we are informed by Mr. W. Warburton, Chairman of the Bradford Education Committee, that Mr. W. Williamson, C. Architect, Bradford, was responsible for the preparation of the plans and the supervision of the work.

### Government Houses for Coventry Munition Workers.

All the nearly 600 houses which were erected last year near Coventry for munition workers are occupied, and the Ministry of Munitions has placed before the City Council a scheme for building 200 more dwellings. The Minister is prepared to bear the cost, with the suggestion that the Corporation should be willing to take over the properties after the War. The Council is recommended to accept the proposal, subject to their having the benefit of State aid as favourable as that which may be given to other schemes. In former instances the Ministry paid the difference between pre-war prices and those then existing.





## WAR BUILDINGS SECTION

### THE NISSEN HUT ON THE WESTERN FRONT.

REVERSION to type has been a strong feature of this War—as the mine and grenade, in particular, serve to remind us. And no less astonishing is the fact that the War should have developed into a fight with the Unseen. On land whole armies engage in a battle and scarce a man is visible above ground, while on the sea the submarine supplies the naval tollary. So has come about that Trench architecture which we are now all

familiar with—a manner of building rooms deep down in the earth, where no shell can pierce. This is the essential and only way of providing habitations for our men in the firing line, but farther back, out of range of the enemy's guns, the soldier can emerge and live and sleep above ground. And then arises the problem of housing him in his tens of thousands. Billets in existing buildings, and hutments improvised of timber, were for

long the accepted means, but on the Western Front a new type of building has lately made its appearance. This is the Nissen hut, devised by a Canadian Engineer officer—another reversion to type, to the type of the beaver's hut or the Esquimo's. On this page we are able to reproduce an official photograph showing a colony of about fifty Nissen huts on the snow-covered ground, and a glance at the illustration is sufficient for us to realise



*Official Photograph: Crown Copyright Reserved.*

NISSEN HUTS ON THE WESTERN FRONT.



the general system on which the huts are put together. But further particulars are needed in order that we may gain a complete understanding of this newest manner of housing troops in the field, and fortunately these particulars have been furnished by Mr. Filson Young, who, as a correspondent with the British Army in France, has contributed to the "Daily Mail" a delightful article on the Nissen hut, from which we take the following extracts:—

"At about the same time as the tanks made their memorable debut on the battlefield, another creature, almost equally primeval of aspect, began to appear in the conquered areas. No one ever saw it on the move or met it on the roads; it just appeared. Overnight you would see a blank space of ground; in the morning it would be occupied by an immense creature of the tortoise species, settled down solidly and permanently on the earth, and emitting green smoke from a right-angled stem at one end, where its mouth might be, as though it were smoking a morning pipe. And when such a pioneer found that the situation was good and the land habitable it would apparently pass the word; for by twos and threes, by tens and hundreds, its fellow-monsters would appear, so that in a week or two you would find a valley covered with them that had been nothing but pulverised earth before.

"The name of this creature is the Nissen hut. It is the solution of one of the many problems that every war presents. The problem here was to devise a cheap, portable dwelling-place wherein men could live warm and dry; cheap enough to be purchasable by tens of thousands; portable enough to be carried on any road; big enough to house two dozen men; simple enough to be erected by anybody and on any ground; and weatherproof enough to give adequate protection from summer heat and winter cold. All these conditions are fulfilled by the Nissen hut . . . of which there are at least 20,000 in the country to-day, the homes of some half-million of British Tommies.

"The Nissen hut consists of a roof, ends, and a floor. The roof is simply an arch of corrugated iron. . . . Anyone can put it up, but four men can do it easily in four hours. The only tool required is a spanner. The whole can be packed on an Army wagon, and its weight is two tons; but no single part or package is heavier than can be unloaded by two men. All the parts are interchangeable. The hut rests on three longitudinal sills 27 ft. long. On these you lay the panels of floor-boarding. There are twelve of them; you can put them down in any order you like—they are all the same. The roof is in forty-eight pieces—all the same. You arrange them in three 9-ft. sheets, with a 6-in. overlap—that is, one corrugation of overlap. You go on fitting them together anyhow, in any order. . . . The lining, of  $\frac{1}{2}$ -in. match-board, is fastened to ribs of T-iron that follow the semi-circular shape of the roof. There are five ribs made of three segments each. These segments are nested in bundles of five; you use them in any order you like—they are all the same. There are no nails to drive. A single pattern of hook-bolt is used for every fastening. The lining is tongued and grooved, and however green the wood is or however much it may shrink owing to the heat in the hut there are no draughts. You simply keep knocking it down tight to the sides of the hut (where the men's heads are when they sleep), and the shrinkage is represented by an open space along the middle of the

roof which gives ventilation into the air space between roof and ceiling, which is so valuable a feature of the hut. . . .

"These are the new homes for which many a soldier on the Somme front is thanking his stars in this bitter weather. Twenty-four men sleep warm and dry on their beds on the floor. By day the beds are rolled up against the sides, and the whole middle space (which as a mess would seat fifty-two men) is available for work, games, messing, writing, or reading. The hut is warmed by the ordinary Canadian stove—an iron drum with two holes in it and a smoke-pipe—which is the only portable furnace that you can make red-hot on green wood fuel."

The Nissen hut is not intended to keep out shells, but it provides a most comfortable habitation. It is most easily put together, is portable and durable, while its round back lends itself to artistic "camouflage" (screening). An artist has been at work, it will be noted on the door of one of the nearer huts seen in the photograph which we reproduce. The artist at the Front has plenty of scope for his talents, more especially in the painting of scenery put up to cover a vulnerable road or a gun platform, and the Nissen hut offers him still another opportunity for introducing a little Art into the very midst of War.

## WAR BUILDING AND THE WAR LOAN.

We trust—and, indeed, we have good reason to believe—that the building industry is doing its duty in relation to the great War Loan, which closes the day after to-morrow—i.e., Friday, February 16. Arguments commending it need not be adduced; they are already familiar, and they are all summed up in the obvious fact that our success in the War depends very largely on the success of this loan.

So much has been said about "building being brought to a standstill," that to commend the War Loan to the earnest support of the Building Industry might seem ironical to those who do not look beneath the surface. But while it is quite true that private building has been stopped in the national interest, it is also true that the amount of constructional work at present in progress is so vast as to absorb all the available men and materials. It is, indeed, in order that the men and the materials may not be diverted from Government employment in the construction of hutments, barracks, canteens, hospitals, munition works of every kind, and other buildings of national necessity, that private building has been restricted.

It follows, therefore, that some architects and many builders and contractors, manufacturers, and supply merchants, to say nothing of the workmen who are available, are having the busiest time of their lives, with profits and earnings to correspond. We may therefore anticipate with confidence that the industry will be found to have made an important contribution to the War Loan. That many have already done so appears in the public announcements. There is, for example, the subscription of Mr. Thomas Dinwiddy, F.S.I., F.R.I.B.A. (of the firm of Dinwiddy and Sons, architects and surveyors), who has contributed the sum of £10,000. We hear also of many other handsome subscriptions from all departments of the building industry—from architects, contractors, specialists, and manufacturers. It is therefore evident that the industry as a whole is doing its duty.

## CANTEEN KITCHENS.

The question of the equipment of mess-rooms for factory hands, male, female, and for clerical staffs, has recently come very much to the front. It is becoming increasingly recognised that it is good policy to provide in this for the comfort of employees, especially as in most factory districts the accommodation outside is both limited and unsatisfactory. If good fittings are provided in the first place, so that the cost of upkeep and fuel are reduced to a minimum, and if the arrangements are conducted on sound lines, the mess-room is a good investment, in that it leads to greater contentment of the employees.

Broadly speaking, mess-rooms divide into two classes:—

(1) Where the only provision is means of warming-up previously cooked meals which are brought in bowls or plates; with the supply of boiling water for tea-making.

(2) A complete kitchen equipment where, in addition to or instead of the above, food is provided and cooked.

### Warming-up Food.

The usual method of warming-up is in a large steam of gas-heated closet. If steam is available, this is the best; with wrought-steel steam pad shelves, steam is not available, the best method to heat them by gas. The water for making is either boiled in bulk so as to give at the required time the full amount of water, or supplied from continuous water boilers, which boil the water as fast as it can be drawn off. There is little to choose between the two methods, but in either case the great point aimed at is quick service. This is achieved by gas if steam is not available, but if steam can be supplied it is more efficient and much more economical both for warming-up meals and for boiling water.

### A Complete Kitchen.

In cases where the whole of the food is cooked, the kitchen is on a more ambitious scale. It includes, in addition to the fittings already described, facilities for roasting, boiling, frying, steaming, and steaming. The roasting and baking are generally done in up-draw gas ovens, which are better than a multiplication of domestic gas cookers; a large central coal hot-plate, or a bank of coal-heated ovens where gas is not available. Where gas is available, electrically usually preferred for this class of kitchen, where meals all take a short period.

Owing to the cost of current, it is generally practicable to use electricity for cooking purposes. We understand, however, that Messrs. Vickers have fitted an electric apparatus for roasting where gas was not available, and the danger arising from sparks eliminated by fittings.

As many of the kitchens are only of temporary nature, a cheap class cooking apparatus is often fitted where the kitchen is likely to be a permanent one it is very advisable to fit thoroughly good fittings of sound construction, which are efficient in work and are not a continual source of expense for repairs. Frying and stewing are usually done on a gas or coal hot-plate. For boiling vegetables, meat and steam-jacketed pans are provided where steam is available; if not, the boiling can be done by gas or coal. Po-





For Factory of Wm. Cubitt and Co.



For Works of Vickers, Ltd.

CANTEEN KITCHENS FOR WAR WORKERS.

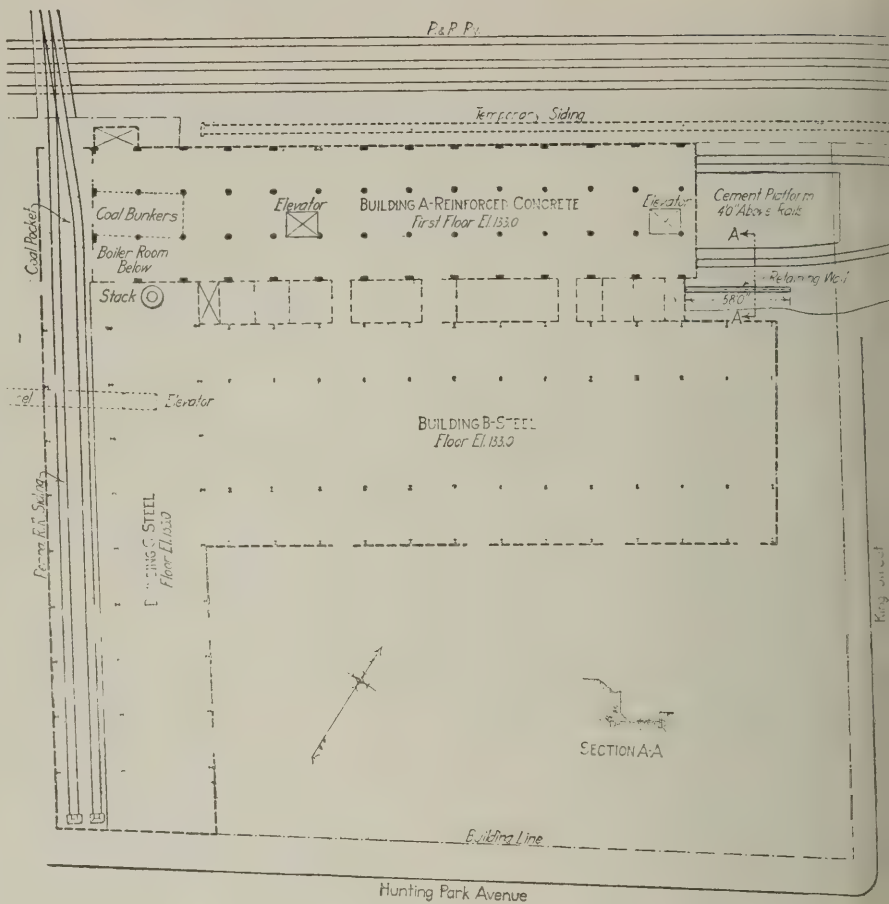
puddings, and fish are steamed in wet steam ovens or potato steamers. The steam in these can be generated by gas if a steam supply is not available. A carving table is usually provided, and this is fixed so as to facilitate quick service. In most cases the carving has to be done before the factory hands come into the dining hall, so as to avoid delay.

If the number to be cooked for is large enough, and a steam supply is not available, it is worth while to put in a special steam boiler for the purpose; but if the number to be cooked for is only comparatively small, it is better to have entirely gas-cooking apparatus.

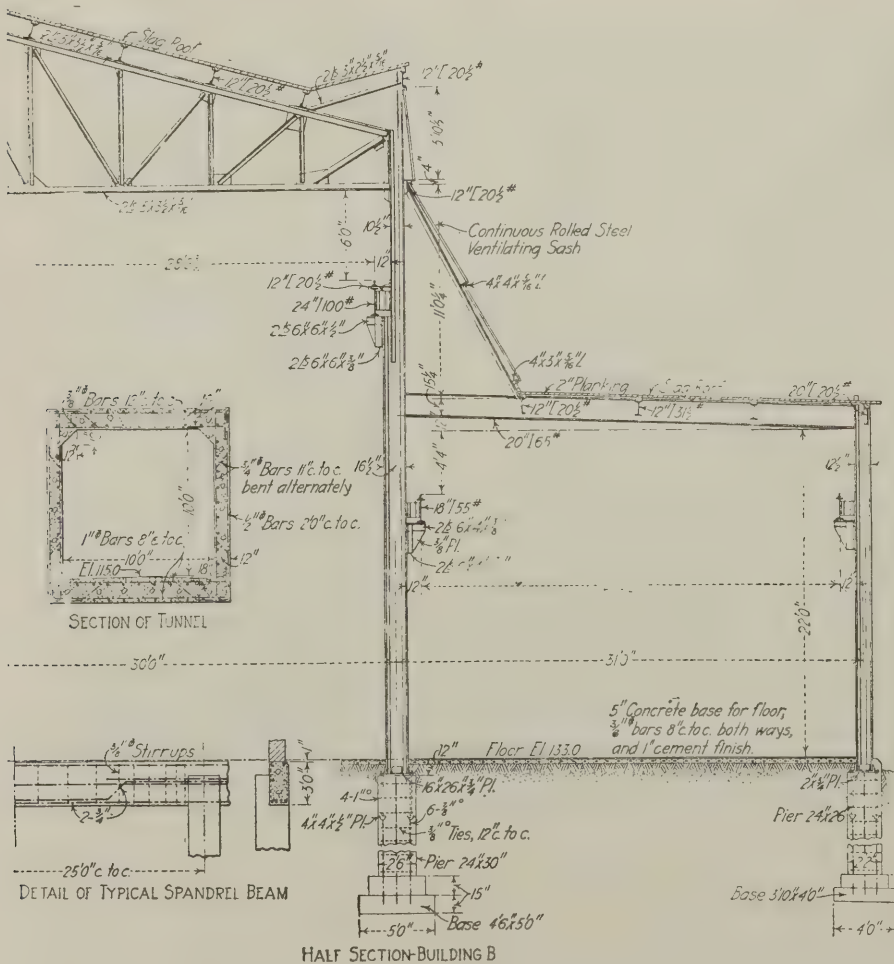
One of the best modern factory kitchens is that of Messrs. Wm. Cubitt, Ltd., which has been fitted up by Messrs. Benham and Sons, Ltd. This kitchen caters for about 3,500 girls. An illustration of it is shown on the preceding page.

### AN UP-TO-DATE WORKS EXTENSION.

Utmost facility in handling material and a maximum amount of daylight were the controlling factors in the design of the works extension of the Budd Manufacturing Co. at Philadelphia, shown by the accompanying illustrations. The extension comprises four large buildings—one reinforced-concrete structure of five storeys, two one-storey steel structures (connected to the existing buildings by a reinforced-concrete tunnel), and one one-storey brick building. The site is adjacent to the Pennsylvania and the Reading railways, and great care has been taken to facilitate



GENERAL LAY-OUT OF WORKS EXTENSION, PHILADELPHIA.



HALF CROSS-SECTION OF BUILDING B, AND SECTION OF TUNNEL.

the rapid handling of trucks for receiving and shipping material. The sidings at the receiving and loading platforms are in completely enclosed buildings, well lighted and heated. This is made necessary by the nature of the materials handled, such as highly polished steel sheets.

The buildings have been designed with a view to obtaining the best conditions for the workers. The reinforced-concrete building A is 284 ft. by 75 ft. on plan. This building is designed with four-ty flat-slab floors on the Norcross system between hooped columns spaced at 25 ft. centres. The storey heights vary from 15 ft. to 20 ft., this variation in height being introduced in order to give a working space and light for finishing large units under as perfect conditions as possible.

Building A has been planned for assembly work on the two lower floors. The units are then carried to the third floor where the final assembly takes place. It is the intention to use this building for the manufacture of all-steel automobile bodies and wire wheels. The work progresses upward, the finished product will be shipped by means of a chute, to the shipping platform, in the basement. The wire wheels will be carried by a conveyor from the fourth floor to the basement. Where possible, trucking has been eliminated as it is expensive and a slow method of handling material.

Special mention should be made of the method of handling the coal and ashes. At the end of building A there have been erected concrete coal pockets from which Link-Belt conveyer carries coal to mechanical stokers. A great saving in labour is accomplished in this way, and all cell facilities are secured for the storage of coal.

The steel-frame building B, 314 ft.



24 ft. on plan, is of the usual one-storey mill type with a high 60-ft aisle in the centre and two lower 31-ft. side aisles, roofed by 2-in. planking and slag. To ensure maximum daylight, the rolled steel ventilating sashes on the sides of the centre aisle are set with a slope of about 30 deg., as shown on the cross-section, so that it will be practically unnecessary to use artificial light except at night.

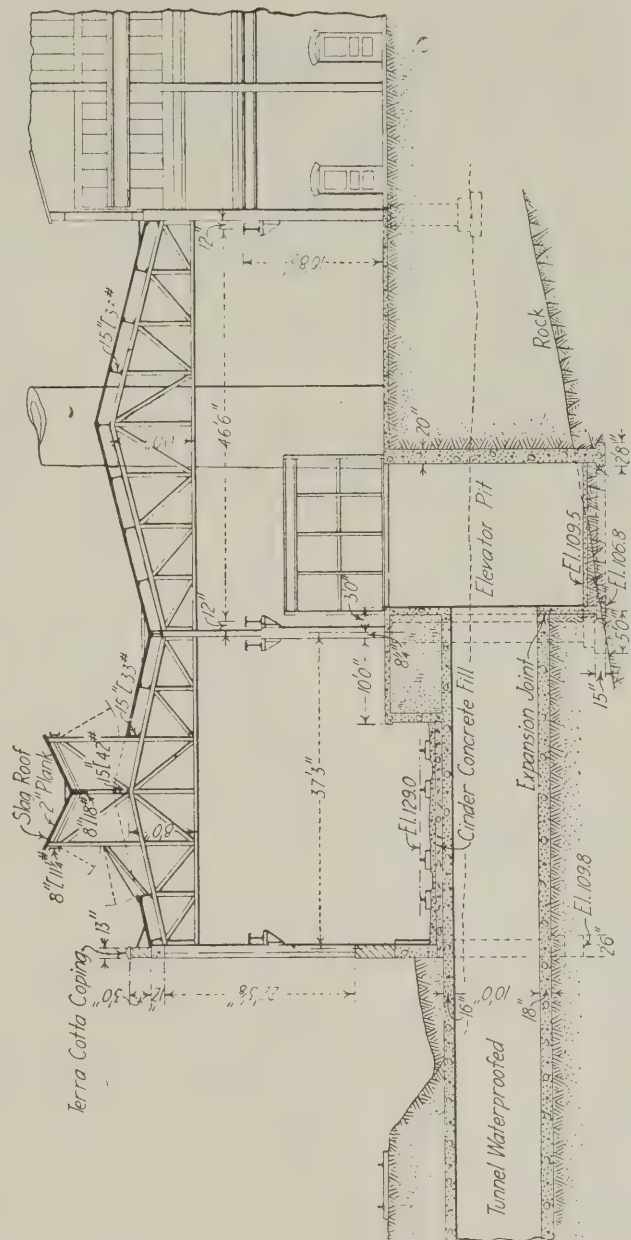
Building B will be used as a press shop. It consists of three bays, the central bay being planned to accommodate large presses. The side bays will be used for smaller machines, such as rotary shears and small punch presses. Across the centre span runs a 15-ton crane, which will be used for handling dies and bringing steel to the various presses. Crossing each of the smaller spans are 5-ton cranes installed for the same purpose.

Connected with building B is the one-story steel building C, 303 ft. long and about 90 ft. wide, with aisles of 40 ft. and 50 ft., as shown in the cross-section. The positions of the columns were fixed by the necessity for the two siding tracks and the loading platform. A 12-in. reinforced-concrete wall supports the edge of the loading platform. The brick walls are carried on reinforced-concrete lintels. About 30 ft. above the roof is a 50,000-gallon tank, carried by steel beams on brick walls. This will be used for the sprinkler system.

Great care has been taken to facilitate the carrying of the steel from the loaded wagons to a suitable storage, and thence to the point where the material is to be used. The steel is brought in on specially designed trucks, from which it is lifted by the 10-ton crane which spans the storage building, and then conveyed to its proper place.

Among other special features is the reinforced-concrete tunnel, which has been made necessary by the fact that the Pennsylvania Railway separates the old and the new buildings. This tunnel is 10 ft. by 10 ft. inside.

The buildings have been designed by Messrs. Ballinger and Perrot, architects, of Philadelphia.



Cross-Section of Building C.

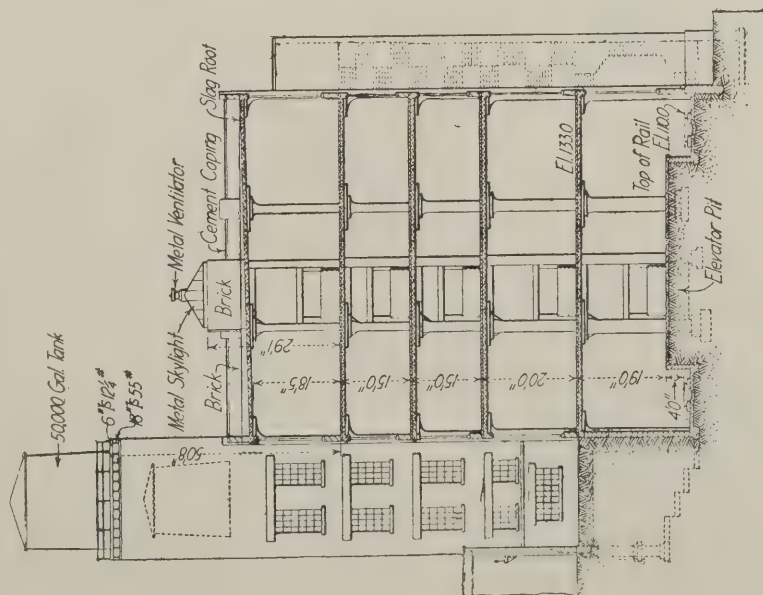
WORKS EXTENSION. PHILADELPHIA.

*War and Westminster Cathedral.*

Progress with the scheme of the gradual decoration of the interior of Westminster Cathedral has been interrupted by the war. This is the second time that war has delayed work on the Cathedral. The marbles for the monoliths supporting the vault of the north and south aisles were obtained at great trouble and cost from ancient quarries at Thessaly. As they were being brought down to the coast they were captured by the Turks in the Greco-Turkish War of 1894 and held for some time.

*Munition Work in Ireland.*

It is understood that the Government Munitions Department has decided on an immediate extension of munition making in Ireland, and the establishment of new factories. The new establishments now projected will employ a large number of workers, and will mean the distribution of a largely increased sum in wages. The possibilities of munition making in Ireland are beginning to be more fully appreciated by the Government, and the excellent manner in which the work is being done in the Irish factories has encouraged the Ministry of Munitions to embark on the larger schemes.



### Cross-Section of Building A.

## PUBLISHER'S ANNOUNCEMENT.

**THE** question of the cost of Advertising is governed entirely by the circulation of a publication. The prices for small Advertisements enumerated below are framed upon the lowest possible basis in order to allow the use of the columns of the Journal for "Wants," &c., at a figure well within the reach of everyone.

Advertisers are purchasing the circulation of a paper in buying space for their announcements, and we are able to announce that "The Weekly Nett Sale of The Architects' and Builders' Journal is larger than that of any other Architectural Journal."

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4 lines (about 28 words) 1s. 6d.; 3 insertions, 3s.

**ADVERTISER**, over military age, having a wide experience in all branches of interior woodwork, requires a responsible position where his knowledge can be of service; highest references.—B., "Chetwynd," Woodcote-road, Wallington, Surrey.

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**CLERK** of Works, or as Builders' Manager (above military age), desires engagement; twenty-five years' first-class practical experience; excellent testimonials and references.—William Parmenter, "Oaklea," Priest-lane, Shenfield, Essex.

**CONTRACTOR'S** General Foreman; carpenter; 44; speedy war construction, hutments; dumpty level, prepare all details, measure all trades; investigation courted; medallist sanitary science.—A., 81, The Avenue, Bedford Park, Chiswick.

**GENERAL** Foreman, disengaged; used to Government work, hutments, etc.; new or alterations, large or small; carpenter; age 51; references from last and present employers; go anywhere.—F. W., 54, St. Andrew's-street, Wandsworth-road, Clapham, S.W.

**GENERAL** Foreman, disengaged; competent, reliable, good draughtsman, timekeeper, and manager of men; trade, bricklayer; excellent references.—C. W., 6, Roland-road, Walthamstow, N.E.

**PAPERHANGER** wants job, piece or otherwise; fill up time painting; good grainer.—H. G., 28, Carsehill-street, Streatham.

**PAPERHANGING** (any description) (piecework); high reliefs, anaglyptas, lincrustas, soirettes, tekko, emdeca, canvas, and all latest productions; artistic panelling and special designs; town and country.—Tel.: Brixton 1702.—Logan, 185, Loughborough-road, Brixton.

**PLUMBER** (good, registered), experienced in all branches of first-class sanitary work, lead laying, gas and hot-water fitting; new, jobbing, or alteration work; take charge or piecework; references.—Plumber, 14, Sunnyside-road, Teddington.

**SANITARY** Engineer, age 47, desires a situation as Sanitary Surveyor, Clerk of Works, management and scheming of sanitary work; wide practical experience.—A. M., 178, Valley-road, Streatham, London.

**THE Association of Builders' Foremen and Clerk of Works**, 56, Old Bailey, E.C.—Experienced Foremen and Clerks of Works can be obtained by applying to the Secretary, Mr. J. W. Sawyer, 214, Clapham Road, S.W. Competent foremen and clerks of works are invited to join this Association.

**WELL-EDUCATED** Youth, nearly 17, excellent references, seeks good berth with architect or builder; has good experience, which he is enlarging by evening studies at the Polytechnics.—C., "Glen Helen," Nant-road, Golder's Green. 955

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### Appointments Vacant.

6d. per line.

#### ARCHITECTS' WAR COMMITTEE.

The object of the Professional Employment Committee is to provide temporary paid work for British architects who are entirely dependent upon their profession for their living, and whose present difficulties are due entirely to the war. Applications can only be considered from architects who are ineligible for military service and unable to obtain War work of a professional nature. Enquiries should be addressed to the Honorary Secretary of the Committee at 28, Bedford Square, London, W.C.

**MATERIAL** Clerk (ineligible) wanted for building contract in the North; must have had experience in dealing with large quantities of materials; active and accurate.—Apply, stating age, experience, and wages required, to Holloway Bros. (London), Ltd., Bridge Wharf, Grosvenor-road, Westminster, S.W.

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**BOOKS**.—Books on Building Trades, Engineering, Educational, Literary, Technical, and all other subjects; second-hand at half prices; new books at discount prices; catalogues free; state wants; books sent on approval; books bought; best prices given. W. and C. Foyle, 121-123, Charing Cross Road, London, W.C.

**TO ARCHITECTS COMPETING.**  
**SCHEMES AND ESTIMATES FOR ENGINEERING WORK**  
(Lighting, Heating, Ventilation, and Sanitation), and Architectural Metal Work, supplied free of charge of **STRODE AND CO., LTD.**, 48, Osunburgh Street, London, N.W., and 18, Easy Row, Birmingham.

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**THE ROYAL INST. OF BRITISH ARCHITECTS,**  
and the **SOCIETY OF ARCHITECTS,**  
On a complete, practical, and highly Successful  
Method by

**Mr. JAMES NEILL, F.S.I., Etc.,**  
Architect and Surveyor, Standard Buildings, Leeds.  
(Tel. 192.)

Note.—Before deciding upon any system of tuition, an intending candidate is invited to communicate with Mr. Neill (who, in addition to many other qualifications, is a Medallist, Honoursman, Prize-man, and Head of the Department of Building at the Leeds Technical School).

The 3, and the 15, months' S.I. Courses commenced in January. Past successes include:—The Penfold Silver Medal, Building Prize, Driver Prize, and the Irish Special Prize.

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will **SELL by AUCTION**, at the Mart, on **TELDAY**, February 22, at two, the following **FREEHOLD BUILDING LAND**:

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Specification and Forms of Tender may be obtained from the undersigned, to whom they shall be returned not later than the 15th INST. The lowest or any Tender will not necessarily be accepted.

**WALTER R. LOCKE,**  
Borough Surveyor and Water Engineer,  
Town Hall, Hemel Hempstead,  
Feb. 2, 1917.

#### BOROUGH OF DONCASTER.

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1. Roadstone and Setts.
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The Corporation do not bind themselves to accept the lowest or any Tender.

**R. E. FORD, Assoc. M. Inst. C.E.,**  
Acting Borough Surveyor,  
Mansion House, Doncaster,  
29th January, 1917.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

FEBRUARY 21, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1155.

BY the knighthood conferred on Mr. Henry Holloway, of Messrs. Holloway Brothers (London), Ltd., the entire building industry is honoured; and there is no other man through whom it would prefer to enjoy this distinction. He stands for the best traditions of the industry of which he is the leading representative, and occupies this position in virtue not merely of the magnitude and quality of his business activities, but more especially of those qualifications that, to avoid any appearance of flattery, are best summed up in the one word "personality." By his method of conducting the operations of the great firm of which he is at the head, he has exemplified "the dignity of business," and has earned the respect and confidence of architects, of clients, and of the army of workpeople of whom he is the commander-in-chief. No doubt the knighthood implies the fitting recognition of important services rendered to the Ministry of Munitions; but it would have been richly deserved on the career which marked him out as the man best capable of assisting the Government in a capacity in which his success is thus conspicuously signalled.

Eight months is certainly a long time to wait for the results of a competition, and the Royal Institute of the Architects of Ireland cannot be convicted of raw haste in protesting against this delay, which they say has occurred with respect to the competition for the new University buildings of the National University of Ireland. Possibly, as in the case of the Dublin replanning competition, the mild reminder will have the necessary effect. Conceivably the University authorities, harassed by the war, the rebellion; and suchlike fardels, may have forgotten all about such an inconsiderable trifle as an architectural competition for University buildings; but the architects who took part in it must retain a lively recollection of the hard work it entailed, and of the hopes and fears it excited. As a matter of mental and emotional quietism, they would willingly forget these pangs, but—the human mind being what it is—they would prefer certainty of failure rather than uncertainty as to success. Why they should be so long denied this satisfaction of the mind is hard to understand, and we trust that the intervention of the Irish Institute will have the desired effect in ending the suspense.

Mr. Gordon Allen's letters to the Press advocating the reform of building by-laws have drawn down upon him the stage thunders of "Municipal Engineering and The Sanitary Record." Surely our contemporary attacks Mr. Allen with unnecessary vehemence; and even more gratuitous is the insinuation (conveyed as a "sardonic suggestion which has been frequently propounded") "that an attack upon the 'Building By-laws' of Local Authorities is one of the most useful 'stunts' for aspiring and by-law-resisting architects to push in daily newspapers." This passage so manifestly overleaps the bounds of courteous controversy that we reproduce it with considerable reluctance. Then we are further told that "This caprice of denouncing building by-laws might, however, be welcomed with good humour if its effect were not intentionally mischievous and misleading to the majority of

readers of newspapers to whom it is represented—and without justification—that such by-laws needlessly increase the cost of cottage building; that they are unreasonable, and should be abolished, and various other appeals to excite the baser instincts, to arouse antagonism and to increase the difficulties of local authorities whose province it is to ensure the hygienic and stable construction of dwellings, both for rich and poor." With the imputations embalmed in these passages we have no intention of dealing. It is sufficient to exhibit them unannotated. Mr. Gordon Allen stated his case fairly and temperately, and supported it with specific facts. We need hardly add that in his main contention—that "the abolition of many of these out-of-date and inconsistent enactments has become a question of national importance"—he has our entire sympathy; with the simple proviso that some milder term than "abolition" would be less likely to excite misapprehension and alarm, real or simulated.

Dublin City Council, by rescinding its resolution to widen a short section of Earl Street by three feet, has yielded to considerable public pressure. There was a general demand that, in rebuilding, the street should be widened, and the Corporation made the rather ridiculous mistake of supposing that the road reformers could be conciliated by the paltry and utterly useless concession of three feet. "Narrow streets," it was argued, "are good for trade." That they are not good for traffic, however, a protest by the Irish Automobile Club was sufficient evidence, and from other quarters also it was borne in upon the Corporation that the trade interests of any small section of a large city should not be allowed to override the general amenity. In the homely words of Alderman Moran—who in the Council and in the Press has fought the matter out with vigour and ability—"Personal interests are all very well, but the interests of the body of the citizens and the appearance of the city are paramount."

That should be indisputable, and it is rather surprising to find, at this time of day, and on so enlightened a body as the Dublin Corporation, that there are people who vehemently oppose the axiom. One of these belated publicists held "that the men who had developed the street and who made its trade should have the decision of the question"—a proposition that sounds like a dim reverberation through the winding corridors of time. Quite in harmony with it was the assertion of an alderman that "the town-planning maps and proposals were mere dilettante work." Fortunately these enlightened views were exhibited not to the Rural District Council of Little Pedlington, but to Dublin City Council, where they did not greatly prevail; for the three-feet resolution was rescinded, and the proposition now is that the short section of the street upon which rebuilding is necessary shall be widened by fourteen feet. There is no doubt that it will be carried; and, on the whole, the incident is distinctly encouraging to the hopes of town-planners; while the example of the Corporation in promptly rescinding a mistaken motion should not be lost on other public bodies, which, as a rule, lack the moral courage to acknowledge and atone for error.

## AN UNSPOILED ENGLISH VILLAGE.

THE illustration on this page shows a view of Thaxted, Essex, the subject of a most interesting article by Mr. W. H. Cowlshaw in "The Architectural Review" for February. From this it will be realised what a delightful village Thaxted is, noteworthy especially for having been spared from the hand of the spoiler. There are few such villages in England, and Mr. Cowlshaw urges that they should be preserved for the benefit of future generations as a national heritage. "The greatest effort should be made by the Government to secure such villages from further destruction by public or private owners. Nothing in the way of alterations or additions should be allowed without the consent of a competent authority. . . . The problem that will have to be faced in the near future

is how to preserve these villages and yet utilise them to the fullest extent for a modern population who have moved out on the land. The agriculturist with his steam, petrol, or electric ploughs and reaping machines will not only need new buildings, but in these out-of-the-way places he will require all the attractions of a town, as far as social life is concerned, because he will have more leisure at his command. . . ."

The accompanying view is sufficient to show that Thaxted well merits preservation in its present unspoiled state, but there are other illustrations in the article which are of even greater merit than the one we now give; the whole preserving a record of a place which once—in the fifteenth and sixteenth centuries—was a centre of industry (the manufacture of cutlery, it is said, though proof of this is uncertain).



A VIEW OF THAXTED, ESSEX.





COMMEMORATIVE COLUMNS AND OBELISKS. III.—VENDOME COLUMN, PARIS.



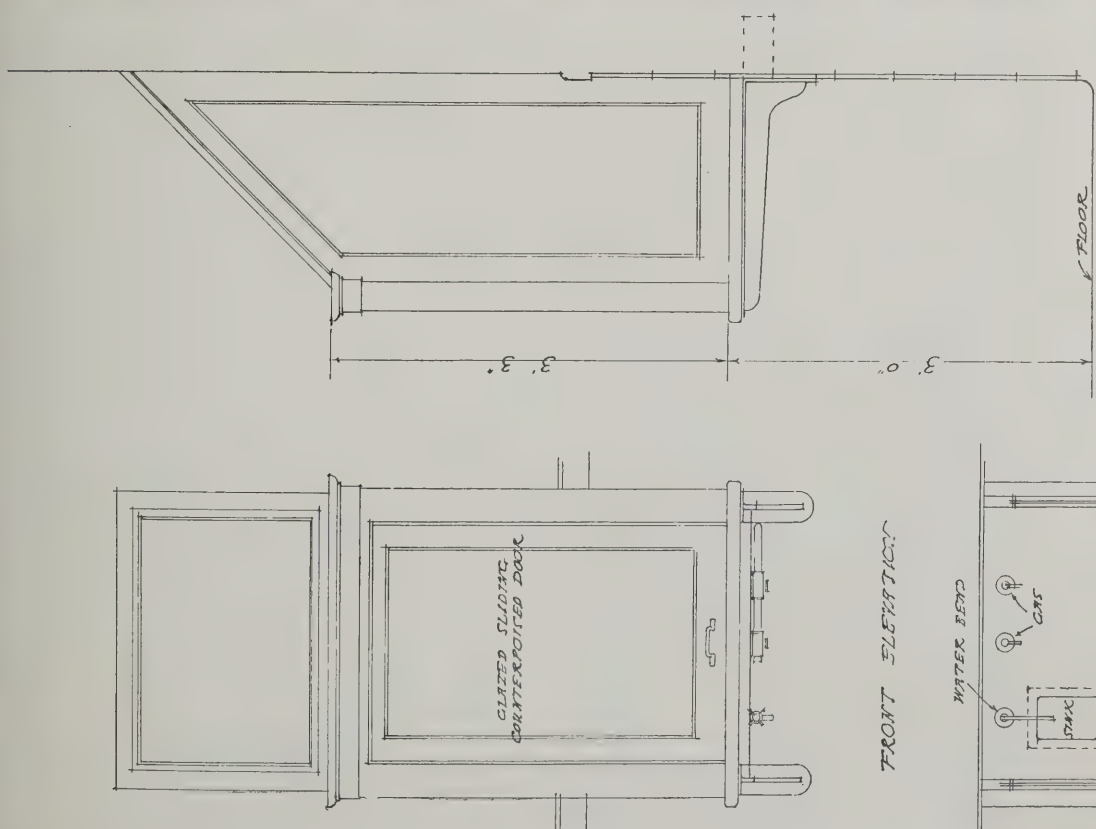




DOORS AND DOORWAYS. XVII.—DOORWAY, RUE DES ARCHIVES, PARIS.

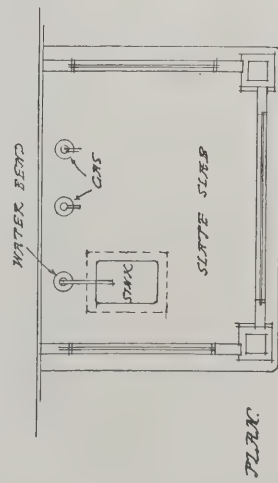




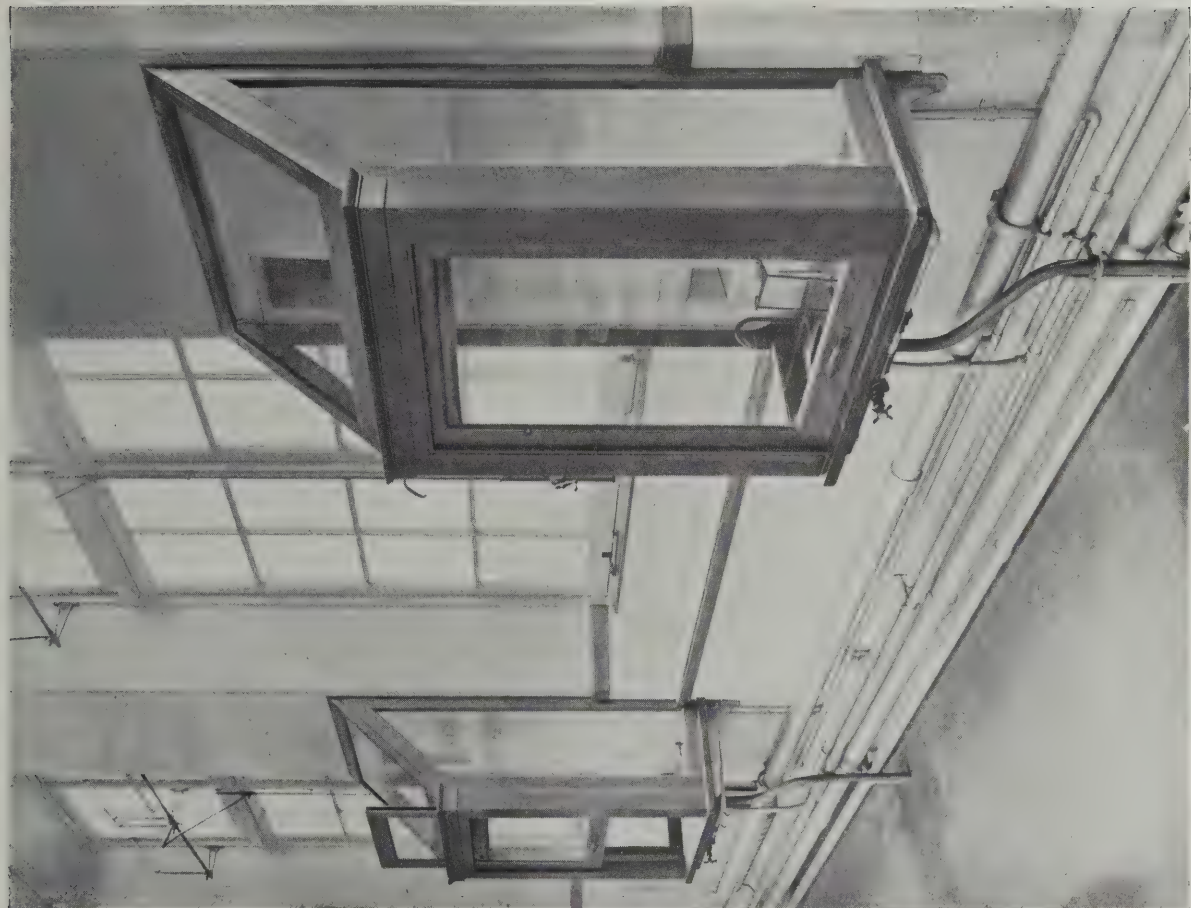


SIDE ELEVATION

FRONT ELEVATION



PLAN



SCIENCE AND TECHNICAL BUILDINGS. XXI.—KING'S COLLEGE FOR WOMEN, KENSINGTON, LONDON, W.: DETAIL OF FUME CUPBOARDS IN CHEMISTRY LABORATORY.

H. PERCY ADAMS AND CHARLES HOLDEN, ARCHITECTS.





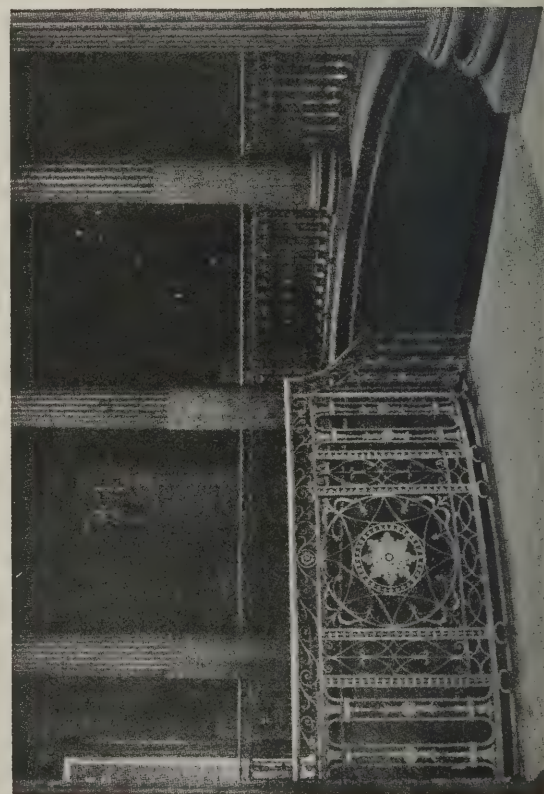
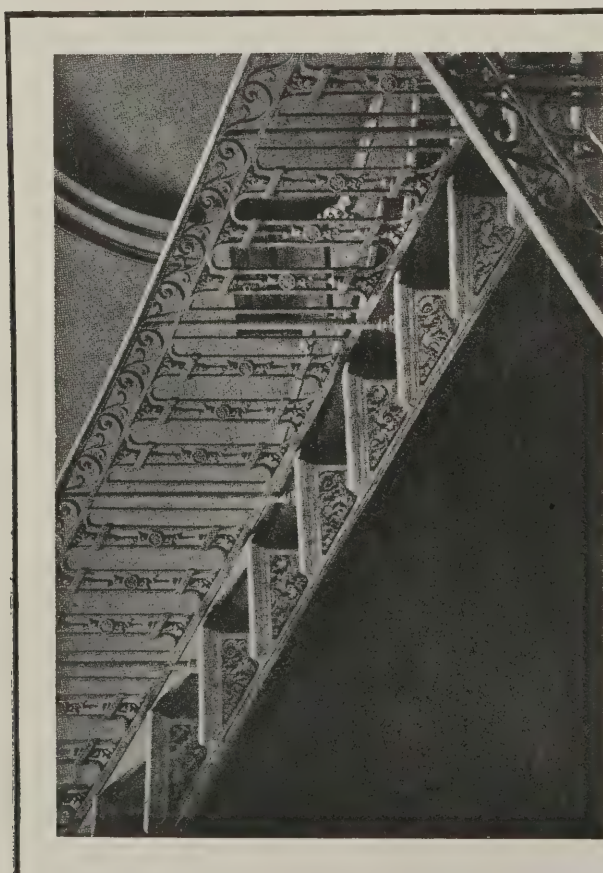
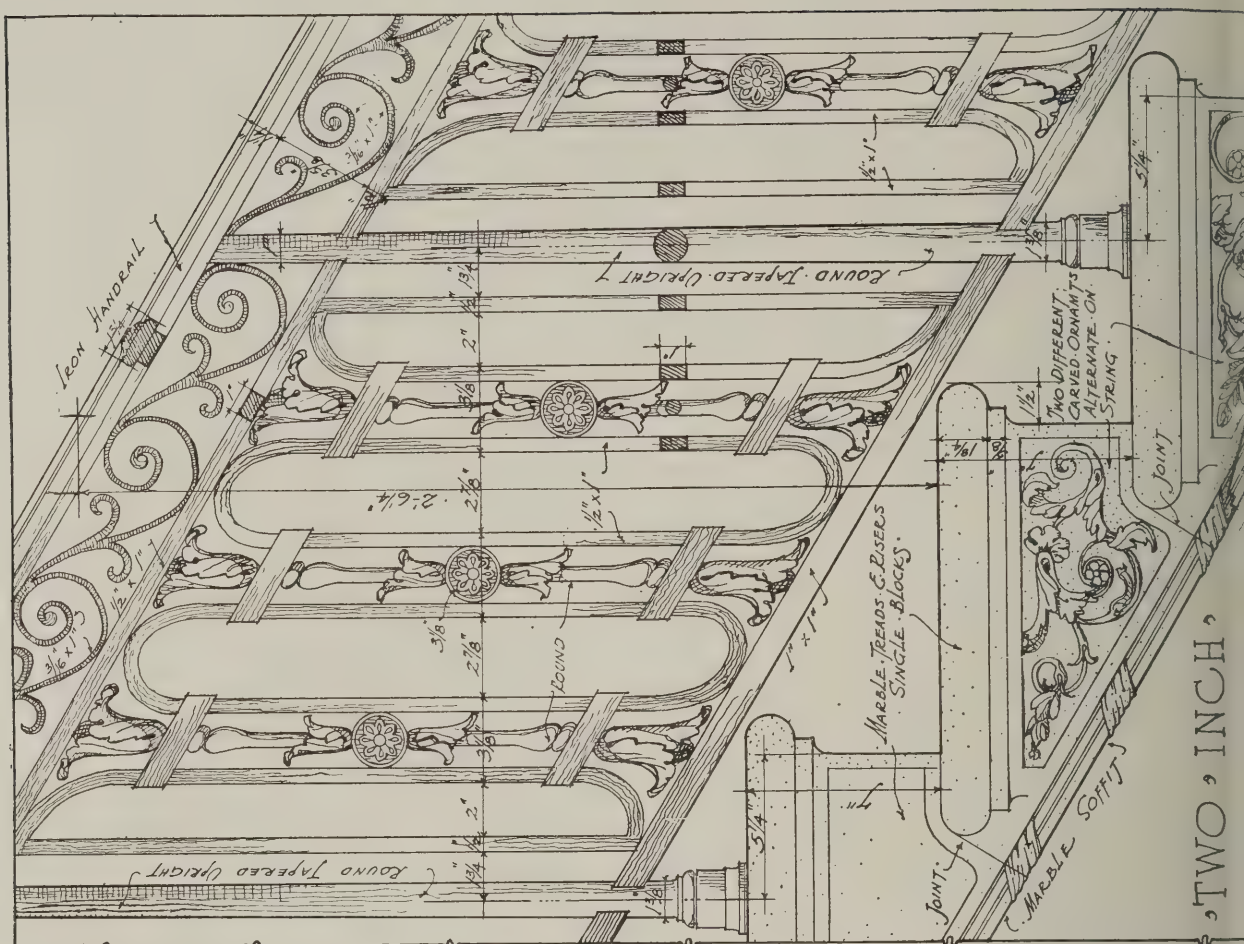


MONUMENTAL ARCHITECTURE (SERIES II.) IX.—THE COLOSSEUM, REGENT'S PARK, LONDON. DECIMUS BURTON, ARCHITECT.  
*From a drawing by E. T. Harris, engraved by Thomas Higham.*













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## THE PLATES.

*Vendôme Column, Paris.*

BY a decree of October 1, 1803, Napoleon, as First Consul, ordered the Vendôme Column to be erected in the centre of what was originally the Place des Conquêtes. Here had been Girardon's equestrian statue of Louis XIV., an ill-fated monument swept away by the Revolutionists, who changed the name of the enclosure to the Place des Piques—a name, however, which brought undesired recollections to Napoleon, by whom the present title was given in memory of the palace once erected on this site for the Duc de Vendôme, son of Henry IV. The Vendôme Column proclaims very strikingly how the classical tendencies encouraged by the conquests of the French armies directed the attention of architects to the monuments of the Romans. In this instance the design of Trajan's Column was bodily transported to serve as a model for the commemoration of the victories over the Russians and Austrians in 1805. The architects engaged upon this work were Gondouin and Lepère, whose labours it occupied for four years, from 1806 to 1810. The column is to all intents and purposes an exact copy of Trajan's, both in height and detail, the only difference being the treatment of the spiral band of bronze reliefs that clothe the stone shaft; these reliefs, cast from cannon taken from the enemy, depict the soldiers of Napoleon in numerous scenes from the break-up of the camp at Boulogne to the Battle of Austerlitz. The principal sculptors of the day were engaged on them, working in accordance with the designs of the painter Bergeret. When first completed the Vendôme Column was surmounted by a figure, by Chaudet, representing the Emperor as a laurel-crowned Cæsar, his left hand resting on a sword, his right holding a Winged Victory. The Allies, upon their arrival in Paris in April, 1814, commanded that this figure be removed, which was accordingly done; but the figure of Peace projected in place of it was not forthcoming, and up to 1830 a monster fleur-de-lis supporting a white flag occupied the point of vantage. Louis Philippe, not alarmed at any evocation of the Napoleonic spirit, ordered that the Emperor's statue should be set up afresh; but Chaudet's no longer existed, his bronze, by a singular destiny, having been melted down for the casting of the equestrian statue of Henri IV. on the Pont Neuf. Emile Seurre was charged to make a new one, showing the Emperor as the Little Corporal in a great coat and three-cornered hat, a semi-deification to which Napoleon III. took exception. Augustin Dumont was then charged with the reconstruction of Chaudet's figure. Meanwhile Seurre's statue was moved to the *rond-point* of Courbevoie, where it stayed till 1870, when, as the victim of popular frenzy, it was thrown into the river; not destroyed, however, the statue having been recovered from the water, and taken to the Dépôt des Marbres. Here it remained, forgotten, until 1900, when it was transferred to its present home, the Musée de l'Armée. To return, however, to the last events in the career of the column itself. These culminated on May 6, 1871, on which day the Communists pulled down the entire structure. A good number of the bronze plaques, however, were subsequently recovered, and served as models for the missing ones, and the replica of Chaudet's figure, though it had fallen from its height of 140 ft., was found to have suffered comparatively little damage. The re-erection of the column was ordered by a decree of May 30, 1873, and the work was successfully carried out by Alfred Normand, Dumont's figure being put back in its place on December 27, 1875. The vicissitudes of this column have been so strange as to warrant recounting here; but the column itself, by comparison with other works of this period, is too obviously a plagiarism to be re-

garded with unqualified admiration. A far more inspiring column is the one set up at Boulogne. We shall publish a plate of this next week.

*Doorway, Rue des Archives, Paris.*

This belongs to the seventeenth century, and is a beautiful example of its period, the overdoor enrichment being especially graceful and vigorous.

*Fume Cupboards for Chemistry Laboratory.*

The equipment of the laboratories at King's College for Women, Kensington, is excellent alike for its exact compliance with laboratory needs and for its architectural refinement in design. The fume cupboards which we illustrate are an admirable example of this. Particularly commendable is the arrangement of the sliding panel at the front. More often than not the stiles, with counter-weights within, are carried up above the top of the cupboard, and look very ungainly when the sash is in its closed position. The arrangement adopted by Messrs. Adams and Holden is altogether a better one. Our photograph shows one cupboard closed and another open, and the neatness of the arrangement is at once realised. These cupboards are on the wall piers between the windows, and in that position they are, we think, much better placed than when put actually against the windows, as in some cases.

*The Colosseum, Regent's Park, London.*

There have been many rotundas for spectacular and other entertainments in London, and among them the Colosseum, which was built in Regent's Park from designs by Decimus Burton, takes almost the first place. The building was erected in 1823 and demolished in 1875. In design it was really a Greek version of the Pantheon at Rome, and that name would doubtless have been given to it had it not been already appropriated by the building which was erected in Oxford Street from designs by James Wyatt. The Colosseum was a rotunda 128 ft. in diameter, with a Doric portico on one side. The Order of the portico, which, like the rest of the building, was constructed of brick faced with stucco, followed exactly the Order of the Parthenon, as far as the details of that building were known at the time. The rotunda was polygonal on plan outside, with a pilaster at each angle, and the dome which covered it was constructed entirely of timber and glass, light being admitted through the upper part of the framing, in imitation of the eye of the Pantheon. The interior surface of the rotunda was entirely covered by a panorama of London as seen from the dome of St. Paul's; the building was erected for the special purpose of showing this panorama, though it may be opined that the spectator might, with more satisfaction, have studied the actual view so near at hand. A tower-like erection stood in the centre of the floor, with balconies at different heights, and there was a model of the ball and cross of St. Paul's at the top—to simulate reality. Staircases led up the tower, and there was also an early specimen of a lift—an "ascending room"—worked by a hand winch; this must, indeed, have been one of the very first public lifts erected. Around the Colosseum were gardens containing conservatories, a sculpture gallery, a Swiss chalet, and other mildly exciting shows, in general representing the Earl's Court exhibition of the day. Cambridge Terrace now occupies the site.

*Stair Balustrading, New York City Hall.*

This is the original work carried out to the design of John McComb. It possesses much merit, though one might raise the criticism that the freedom of the wrought work of the smith from which it derives its inspiration has suffered in the process of "design" by the architect.



## LEGAL.

**Delivery of Timber: Interesting Point.***Roe v. Naylor.*

February 9. King's Bench Division. Before Justices Bailhache and Atkin.

This was a case in which Messrs. R. A. Naylor, timber merchants, of Warrington, appealed against a decision of Judge Howard Smith at Wolverhampton County Court in favour of plaintiff, Mr. Roe, builder, of Wolverhampton, who sued them for damages for breach of contract to deliver timber.

The short facts were that Mr. Roe ordered goods from a traveller, and the sold note, in fact, had a condition on it in small type to the effect that they were sold "subject to being on hand and at liberty when the order reaches the head office." As Mr. Roe did not get delivery of the first items ordered he brought his action, and said he never saw the condition on the contract upon which defendants relied. Defendants appealed against the judgment in Mr. Roe's favour, and relied on the condition referred to.

Mr. Justice Bailhache said that the condition was a very proper one, as where a firm had travellers they had to safeguard themselves against having the same goods sold two or three times over. The condition was generally recognised and was known as "subject to goods being unsold." The law was that when one party handed to another a sold note which was accepted as containing the terms of the contract, there was no duty on the seller to ask the buyer to read the note or call his attention to the contents of the sold note. But a sold note could be a misleading document—the conditions might be misleading, because they could be so ambiguously worded that they could be read equally well in two ways, or because they were so placed in the document that a man of ordinary care and intelligence on reading it would not expect to find the conditions in the position in which they were in fact placed. In such a case the buyer could not be bound by the clause or condition.

The only question, therefore, in this particular case was, said his lordship, whether the printed clause on the document was so printed that from its position, size of type, etc., an ordinary person, reading the document with proper care, might reasonably miss it. If in this case the buyer could show that he could not reasonably be expected to see the clause, he could not be held to be bound by it. There must be a new trial of the case for the judge to direct his mind to this point. If the judge found the plaintiff could say he was misled, then the contract note must be read as though the particular condition or clause relied on was not in the document.

Mr. Justice Atkin concurred.

**Question of Party Wall: Right to Support.***Selby and Another v. Whitbread and Co., Ltd.*

February 14. King's Bench Division. Before Mr Justice McCardie.

This was an action by the plaintiffs, the executors of the late Mr. Stanley Harris, against the defendants, claiming the sum of £27 odd under an award of January 1916, a declaration that the defendants were liable to carry out the works ordered to be done by the award, and, alternatively, for damages for depriving plaintiffs' premises of support.

Mr. Macmorran, K.C., and Mr. Cairns appeared for the plaintiffs, and Mr. Wild,

K.C., and Mr. G. W. Ricketts represented the defendants.

The late Mr. Harris was owner of No. 11, Royal Mint Street, Minorities, and the defendants were the owners of the premises adjoining, the Rising Sun public-house. In April, 1914, the defendants served Harris with a party structure notice under the London Building Act, 1894, that they intended to do certain work in and upon their premises, and under section 91 of the Act they appointed Mr. Arthur Dixon their surveyor to settle any differences that might arise. In May, 1914, Mr. Harris appointed Mr. Edward William Eason as his surveyor under the Act. Messrs. Dixon and Eason, by an award of February, 1915, gave directions as to the performance of the work for which notice had been given by the defendants as building owners, and directed that precautions should be taken for temporary support of the building belonging to the plaintiff, and further power was reserved to the surveyors to make further awards. Plaintiffs alleged that there was a further award of January, 1916, and a third surveyor, Mr. William Woodward, awarded and determined that the building owners should do certain work, repair the roof, etc., to the reasonable satisfaction of the surveyor of the adjoining owner. Plaintiffs said that they had suffered damage from the withdrawal of the support previously enjoyed by the defendants' building to which they were entitled by enjoyment of support for over twenty years. Plaintiffs further alleged that in re-building defendants had wrongfully removed the support to which plaintiffs' building was entitled, that they had omitted to take proper and reasonable precautions to support plaintiffs' building, and in consequence plaintiffs' building had been weakened and injured.

Defendants in their pleadings denied the jurisdiction to make the award of January, 1916, and said there was not in January, 1916, or at any time material to the award any difference or dispute between plaintiffs and defendants within the meaning of the London Building Act, and that the award of January could not be entertained in view of the former award. Defendants denied that they had withdrawn from the plaintiffs any support to which they were entitled or that they had wrongfully removed any support to plaintiffs' building or had omitted to take any precautions to support plaintiffs' building. Defendants said they were not at any material time the building owners within the meaning of the London Building Act. Any work necessary to make good or repair injury or disturbance of plaintiffs' building that was necessary under the award, binding on the defendants, had been done before the commencement of the action.

Evidence was given on behalf of the plaintiffs by Mr. Selby, one of the plaintiffs; Mr. Eason, of Messrs. Reynolds and Eason, 192, Bishopsgate, E.C.; Mr. William Woodward, of Messrs. Woodward and Sons, Southampton Street, Strand, W.C.; and Mr. H. Martin, Messrs. Thurgood and Martin, Chancery Lane, W.C.

For the defence: Mr. Tanner, district surveyor; Mr. Arthur Dixon, surveyor to the brewery; Mr. Hunt, chief valuer of the L.C.C.; Mr. F. A. Higgs, of the L.C.C.; Mr. Horace Chester, architect and surveyor, 3, Tudor Street, E.C.; and Mr. Crabb, of Messrs. Harris and Wardrop, builders, of Wallwood Street, Limehouse, E., gave evidence.

A great deal of evidence was directed to the fact that cracks appeared in the house and in the ceilings.

After hearing counsel his lordship reserved his judgment.

## NEWS ITEMS.

*Kitchener Memorial Homes.*

Homes for disabled service men are to be built at Chatham as a memorial to Lord Kitchener, who was the only Freeman of the town.

*Memorial Window at Billinghamborough.*

A new memorial window, which has been placed in Billinghamborough Parish Church to the memory of the late Dr. Bladdon, was supplied by Messrs. A. L. Moore and Sons, of Southampton Row, London, and has cost £145. The subject is "Christ healing the sick and suffering."

*Land for War Purposes.*

Mr. Edwin Savill, addressing the members of the Surveyors' Institution, stated that 150,000 acres of land had been taken over under the Defence of the Realm Act since the beginning of the War, and that the annual value of buildings acquired was £2,500,000.

*Repairing Explosion Damage.*

The Office of Works are making rapid progress with the restoration of the area which was damaged by the recent munitions explosion near London. From 750 to 1,000 men are employed on the work. The whole of the debris has been cleared from 600 houses, and the work has been finished at 270 houses. The total damage is now estimated at £500,000.

*Dissolution of Partnership.*

Mr. Charles J. Blomfield, F.R.I.B.A. (late senior partner of Sir Arthur Blomfield and Sons), 125, Park Road, N.W., writes: "May I bring to your notice the fact that my brother and I having dissolved partnership at the end of last year the firm of Sir Arthur Blomfield and Sons no longer exists. My business is now being carried on at the above address."

*New Isolation Hospital for Doncaster.*

At a meeting of the Doncaster Public Health Committee, the circular from the Local Government Board as to public works likely to be carried out after the War was further considered, and it was recommended that the only work of importance in this department that required to be proceeded with was the erection of a new isolation hospital at an estimated cost of £24,100.

*Dublin Town-Planning Drawings.*

The Civics Institute of Ireland kindly granted permission to the Architectural Association of Ireland to exhibit for a further short period the Dublin Town Planning Competition drawings recently on view at the Chamber of Commerce. The drawings were on view in the Association's premises, 15, South Frederick Lane, from February 5, from 11 a.m. to 1 p.m. and 2 p.m. to 6 p.m., except upon Saturdays and Sundays. There was no charge for admittance.

*Waygood-Otis War Savings Association.*

With a view to encouraging their employees to make an extra effort toward the War Loan, Messrs. Waygood-Otis Ltd., promised last week to buy outright at least 1,000 War Certificates, if applied for before February 16—in connection with the firm's War Savings Association founded on August 2, 1916—and to pay the last shilling on each certificate. This offer, we understand, met with a very encouraging response, many more than a thousand certificates having been applied for. The company's War Savings Association had already collected nearly £1,000.



## SOCIETIES AND INSTITUTIONS.

*Architectural Association of Ireland.*  
At a meeting of the Council of the Royal Institute of the Architects of Ireland, held in the Council Chamber, 31, South Frederick Street, Dublin, Mr. W. Kaye, M.A., B.E., president, in the chair, was decided to convert the Institute's savings in War Loan and Exchequer Bonds into New Five per Cent. War Loan. In connection with the competition for designs for the proposed University Buildings, Dublin, a resolution was passed expressing regret at the delay in announcing the results of the competition for the new university buildings of the National University of Ireland.

*Architectural Association of Ireland.*  
At a meeting of the members of the Architectural Association in their rooms, 17 Frederick Lane, Dublin, Mr. H. G. Skelton, president, Mr. A. Ernest Child presiding, a lecture on "Stained Glass." He said that the beginnings of stained glass were but imperfectly known, but that there is little doubt that the art of making such windows originated in the East. Having described the process of manufacture, the lecturer exhibited on the screen a number of interesting photographs and sketches of pattern windows, composed chiefly of most colourless glass, such as the Five Sisters window in York Minster, figure windows in rich colours, medallion windows, in which the pictures are in medallion form, set in frame-work of an ornamental description, as in Bourges Cathedral. Pictures of Irish-made stained glass were also shown, including a beautiful window designed by the lecturer, and in the Roman Catholic church at Newtownbere.

*Yorkshire Master Builders.*  
The Yorkshire Federation of Master Builders held their annual meeting at the Bradford Town Hall, Mr. C. Boot (Sheffield) presiding. An official welcome was accorded the delegates by the Lord Mayor (Mr. Abram Peel), who was introduced by Mr. J. Taylor (Bradford). The Lord Mayor said he was pleased to have in the opportunity afforded him two years ago, when, as Deputy Lord Mayor, it was his privilege to welcome the federation to Bradford. He was glad to know they had conferred the honour of senior president on a fellow-citizen in Mr. V. Booth, whose firm (Messrs. Michael Booth and Sons) erected the new wing to the Town Hall. He trusted that the future, though bringing great responsibilities, would find everyone able and willing to meet all the demands that would be made on him.

*Lecture on St. Paul's Cathedral.*  
A meeting of the London and Middlesex Archaeological Society was held at the Popsgate Institute on January 24, when Mervyn Macartney gave a lantern lecture on St. Paul's Cathedral. Referring to the threatened subsidence, he said he thought that the cathedral would be all right till someone built an underground aqueduct about ninety feet deep, and then there would be trouble. Legislation might be introduced to prevent such a thing being carried out, as we lived with the ever-present menace of the water and the gravel under the Cathedral being drawn away. Macartney also spoke of the inaccuracies in various accounts of the cathedral, and especially in the "Parentalia." He said that extremely unreliable work began by

saying that Wren laid the foundations from the west end to the east end before he had any difficulty, but it was the fact that the west end of the old cathedral was not pulled down for fifteen or twenty years after he started work from the east end, and it was not possible that he could have cleared the site from the west end. Another statement was that Wren "dugged" a pit forty feet deep and built therein a pier ten feet square to support a corner of the building, but modern investigation had failed to reveal any evidence of this structure. The only way of accounting for these errors was to suppose that Wren gave his assent to them when his age made him uncertain of facts and dates.

*Lectures on Westminster Abbey.*

The Public Library Students' Association opened its second year's activities with the first of two lectures on Westminster Abbey, when there was an excellent attendance. The lecturer was Mr. Allan S. Walker, hon. secretary of the London and Middlesex Archaeological Society, and a member of the London University Panel of Extension Lecturers, and the title of his first discourse was "Westminster Abbey: Its Architectural Features."

*South Wales Federation.*

At the annual meeting of the South Wales Building Trades Employers' Federation, held at Port Talbot, Mr. T. F. Howells, of Cardiff and Caerphilly, was elected president for the ensuing year. Speaking on "After War Prospects and Problems," Mr. Howells advocated the closer union of employer and employee, and said he thought it would be advisable to call a conference between both parties with a view to considering after-war conditions, in order that they might unite in grappling with foreign competition. Another thorny problem which would face the building trade after the war was that of the housing question, and in order to solve that difficulty effectively it would be necessary, he believed, for the Government to assist the building trade generally.

*Glasgow Master Masons and Brickbuilders.*

The report of the Master Masons' and Brickbuilders' Association of Glasgow and Neighbourhood, submitted at the annual meeting, stated that "Government work connected with war and jobbing form the only medium for keeping the work of master masons and bricklayers going on. It is expected that members will participate in the work which may in the future go on under the Town Planning Act and the Corporation housing improvement proposals. The membership of the Association is stated to be 97. The operative masons made a demand for 1½d. per hour increase and for alteration in overtime. After conferences it was agreed to grant the 1½d. increase for a year from July 1, 1916. The wages are now 11d. per hour. The operative bricklayers, after arbitration, were awarded 3d. per hour increase, being half the amount asked, and their wages are now 11½d. per hour. This was the first arbitration entered into by the masters. Labourers received 1d. per hour increase, and their wages are now 8½d. per hour. A proposal put by the directors of the Association before other Master Masons' and Brickbuilders' Associations in Scotland for the formation of a Scottish Association was dropped owing to want of support. An invitation to the Association to become members of the Scottish

National Building Trades Federation was received, but the directors declined, as they thought the present time inopportune. The directors endeavoured to obtain a reduction in the increase intimated in the rent of railway sidings, and also to obtain consideration for contractors in respect of demurrage charges by the various railway companies, but in both cases were unsuccessful. The Committee recommend that the Association communicate with the other building trades in Glasgow and the West of Scotland, and also the Scottish National Building Trades Federation, with a view to a joint communication being sent to the Secretary for Scotland urging prohibition during the war in the interests of the nation."

*Rotherham Master Builders' Association.*

The annual meeting of the Rotherham Master Builders' Association was held at the offices of Messrs. Winter and Foers, Moorgate Street, Rotherham, when Mr. F. H. Bradford was re-elected chairman, Mr. G. H. May vice-chairman, Mr. Fred Leadbeater treasurer, and Mr. A. Hardwicke Foers secretary. A resolution was passed adopting the Sheffield standard rate of wages. A grant of £5 5s. was voted to the Oakwood V.A.D. Hospital.

*The Belfast Building Trade.*

The annual report of the Belfast Builders' Association shows that while the year was not prosperous, a fair quantity of contracts and other work was carried out. The exceptional amount of industrial activity in other trades formed a very marked contrast. The enormous increase in the prices of essential commodities and the restrictions on building and the sale of certain materials had had the effect of prohibiting the public from undertaking any new development schemes. As to the future, an optimistic view should be encouraged, as with the anticipated developments which would undoubtedly take place on the cessation of hostilities an era of exceptional activity in their trade should be anticipated.

## OBITUARY.

*The Rt. Hon. Robert Young.*

The death has taken place at Rathvarna, Chichester Park, Belfast, of the Rt. Hon. Robert Young, who had reached the age of ninety-four years. Mr. Young was a native of Belfast, having been born in High Street on February 22, 1822. He received his early education at the old Belfast Academy, Donegall Street, where he had for his principal the Rev. R. J. Bryce, LL.D. Amongst his school contemporaries were the first Earl Cairns, who in due time became Lord Chancellor of England, and Sir Donald Currie, the famous shipowner. On leaving the academy Mr. Young went to Glasgow, and here he had as his mathematical teacher Professor James Thomson, father of Lord Kelvin. He completed his collegiate education in 1841, when he returned to Belfast, and was indentured to Sir Charles Lanyon, who was then the County Surveyor of Antrim. The first work of importance with which Mr. Young was connected was the construction of the Queen's Bridge, which was built under the joint supervision of Sir Charles Lanyon and Mr. Frazer, the surveyors for Antrim and Down respectively. The deceased gained further experience of his profession in 1845, when the railway from Belfast to Ballymena was constructed. So great was the confidence reposed in him, even at that



early stage in his career, that he was put in charge of a section of the work between Belfast and Antrim. In 1849 he was appointed contractors' engineer in connection with the construction of the railway between Mullingar and Athlone. A few years later he began practice as an architect and civil engineer in Belfast, and after a lapse of about ten years Mr. John Mackenzie, who had served his apprenticeship with him, joined him as a partner, the firm being known as Messrs. Young and Mackenzie. Amongst the structures designed by them may be mentioned the Assembly Buildings, the Scottish Provident Buildings, the Belfast Royal Academy, the Ocean Accident Buildings, Messrs. Robinson and Cleaver's establishment, and the King Edward Memorial at the Royal Victoria Hospital. In 1852 he read a paper on a subject of archaeological interest before the members of the British Association, which met in Belfast in that year. He was a very energetic member of the Natural History and Philosophical Society, of which he had been the president; for many years he was chairman of the governing body of the Linen Hall Library. He contributed a number of papers to the proceedings of the Society of Antiquaries in Ireland, and was appointed a member of the Irish Privy Council in 1907. He was also a magistrate for the County of Antrim.

#### *The late Mr. E. R. Robson.*

In noticing the death of Mr. E. R. Robson, the "Sheffield Daily Telegraph" recalls that Mr. Robson was born at Durham, the eldest son of Alderman Robert Robson, who was three times Mayor of that city. From his earliest years Mr. E. R. Robson conceived an ardent passion for architecture, and after obtaining a practical training under a local builder he went into an architect's office at Newcastle-on-Tyne. He travelled the Continent, and on his return designed many important buildings in various parts of the kingdom. In 1861 he married the eldest daughter of Mr. Henry Longden, of Sheffield, by whom he leaves a daughter and son. This was not his only association with Sheffield. He was the architect of Firth College, of the Sheffield School Board Offices, and of the Central Secondary School, as well as of several of the larger houses at the West End, and one or two of the elementary schools. John Ruskin asked him to plan an art gallery and museum for Sheffield to hold the Ruskin treasures. This Mr. Robson did, but the Corporation secured the hall at Meersbrook, and this was adapted for the purpose, and therefore Mr. Robson's plans were not carried out.

#### *Mr. Charles Gray.*

Mr. Charles Gray, of Newtyle, whose death at the age of 66 is announced, was a partner in the building firm of Messrs. John Gray and Sons. Amongst the principal buildings constructed under his own immediate supervision are the U.F. Church, Newtyle; the Episcopalian Church, Baldovan; and Persie Lodge, Blackwater.

#### *Mr. Archibald Matthias Dunn.*

Mr. Archibald Matthias Dunn, whose death at Bournemouth is announced, was best known for his ecclesiastical architecture, and amongst the structures with which he was associated are the imposing spire of St. Mary's Cathedral, Newcastle; St. Dominic's Church, Newcastle; the monastic and collegiate extensions at Downside, modern Stonyhurst, and the beautiful church at Cambridge built for

Mrs. Lyne-Stephens. In association with Mr. J. Hanson he founded the Newcastle firm of Dunn and Hanson, who were responsible for buildings all over the country. Mr. Dunn had recorded his wanderings abroad in "Notes and Sketches of an Architect," published in 1886. He was the son of Mr. Matthias Dunn, of Castle Hill, Wylam, and was born in 1832. He was educated at the Roman Catholic Colleges of Ushaw and Stonyhurst, and was a Justice of the Peace for the county of Durham.

#### *Mr. James Brasier.*

Mr. James Brasier, who has died at Wimbledon at the age of seventy-six, had started in 1875 the business of Messrs. James Brasier and Sons, builders and decorators, of Wimbledon. He had taken a prominent part in local public affairs, and was an ex-alderman of Wimbledon Town Council.

#### *Mr. Owen Morris.*

Mr. Owen Morris, builder and contractor, Carnarvon, who was seventy-seven years of age, held for many years a prominent place among the builders of the district, and carried out several important public contracts.

#### *A Contractor's Estate.*

Mr. Alexander Easton Gibb, of Easton Gibb and Co., 9, Victoria Street, Westminster, contractors for public works and for the naval base at Rosyth, who died on October 10, aged seventy-six, left estate of the value of £177,199, the net personalty amounting to £163,493.

## HOUSING NOTES.

#### *Scottish Housing Contract.*

The contract for the erection of 1,000 houses for the Scottish National Housing Co., Ltd., at Rosyth has, it is learned, been let to Messrs. Holloway Brothers, Ltd., of London.

#### *Pontefract Workmen's Dwellings Scheme.*

The Pontefract Corporation's scheme for workmen's dwellings has just been completed, and the final payment made to the contractor. The total expenditure has been £22,000, including only £122 as "extras," no allowance having been made for the increased prices of labour and materials since the contracts were signed.

#### *Nuneaton Housing.*

A committee of Nuneaton Town Council have again considered the scheme for housing, and recommend the Council to adopt the committee's recommendation of August 17, 1914, to apply for sanction to raise a loan of £19,000 (pre-war estimates) for the provision of thirty-three houses in Stockingford and fifty houses in Bath Road. It was understood that the whole question would be subject to revision before the work was put in hand. The committee considered a letter received from the Nuneaton Chamber of Trade regarding the alleged shortage of houses in the borough. The Town Clerk was instructed to inform them that the committee were considering the question at the present time.

#### *Housing Scheme for Port-Glasgow.*

In view of the scarcity of house accommodation, Messrs. Russell and Co., ship-builders, have purchased the old toll-house on the Glasgow Road, Ashgrove Buildings, Clune Park—the football ground of the old Port-Glasgow Athletic—and the adjoining house and estate known as Clune Park House and grounds.

All existing buildings will be demolished and about forty tenements of workmen's room-and-kitchen houses of approved design erected in three square blocks of garden plots on the side next the river. Two new streets will be formed leading from the Glasgow Road towards the river, each having a width of forty feet. Messrs. Russell and Co. have also purchased property in the centre of the Glasgow and west end for forming on the ground floors workmen's restaurants. It is a few years since the Messrs. Lithgow, who own the Russell and Co. establishments, rebuilt the central area of old Port-Glasgow at a cost of considerably over £100,000.

#### *Property Owners and State Housing.*

At a conference of the National Federation of Property Owners and Ratepayers held at the Cannon Street Hotel, a resolution was passed expressing deep concern at the present shortage of housing for working classes, which was attributed to the effect of the provision of Part I. of the Finance Act, 1909-10, which had disturbed the confidence of investors, urging the Government to remove the regulations in Part I. and encourage private enterprise and co-operative efforts in the provision of healthy dwellings for the people. Mr. E. Evans, L.C.C., who was elected president, said that to make either the State or municipalities the landlords of the working classes would be a national disaster. To insure a revival in housing building it was necessary to remove the form-filling legislation and special taxation; to get an assurance that neither the houses nor the land would be taxed to a greater extent than other forms of property; that town-planning schemes would be settled without delay; and that there be no unfair State or municipal competition with private enterprise.

#### *Glasgow Town Council and Housing.*

At a meeting of Glasgow Town Council a long discussion took place regarding housing (which was ultimately approved by the Special Committee on Housing and General Town Improvement. The committee recommended the appointment of two outside architects to act in conjunction with the city officials, and to deal in the first place with those districts of the city which, in the opinion of the committee, were most necessitous and required immediate attention on the points of housing of the poorer and working classes, general town improvement, and slum dwelling. The committee further recommended building forthwith of twenty or thirty tenements for the working, the labouring, and the poorer classes on ground owned by the corporation, and to be acquired by the corporation, and or near the most necessitous districts. There was a third recommendation, that having regard to the great influx of munition and other war workers, which had contributed very largely to the scarcity of houses, the Local Government Board be informed of the proposals with a view to ascertaining if the Board would be prepared to assist the scheme financially.

#### *Curing Damp Cellars.*

In these days of strict economy a surprisingly large amount of waste results from food-stuffs and other materials being stored in damp cellars. The difficulty is easily overcome by the use of a waterproofed cement rendering. We are informed that the cellars of a mansion at Roehampton having been very damp, above treatment was successfully applied, the powder "Pudlo" being adopted for the work.





## WAR BUILDINGS SECTION

### CANTEENS FOR WAR WORKERS.

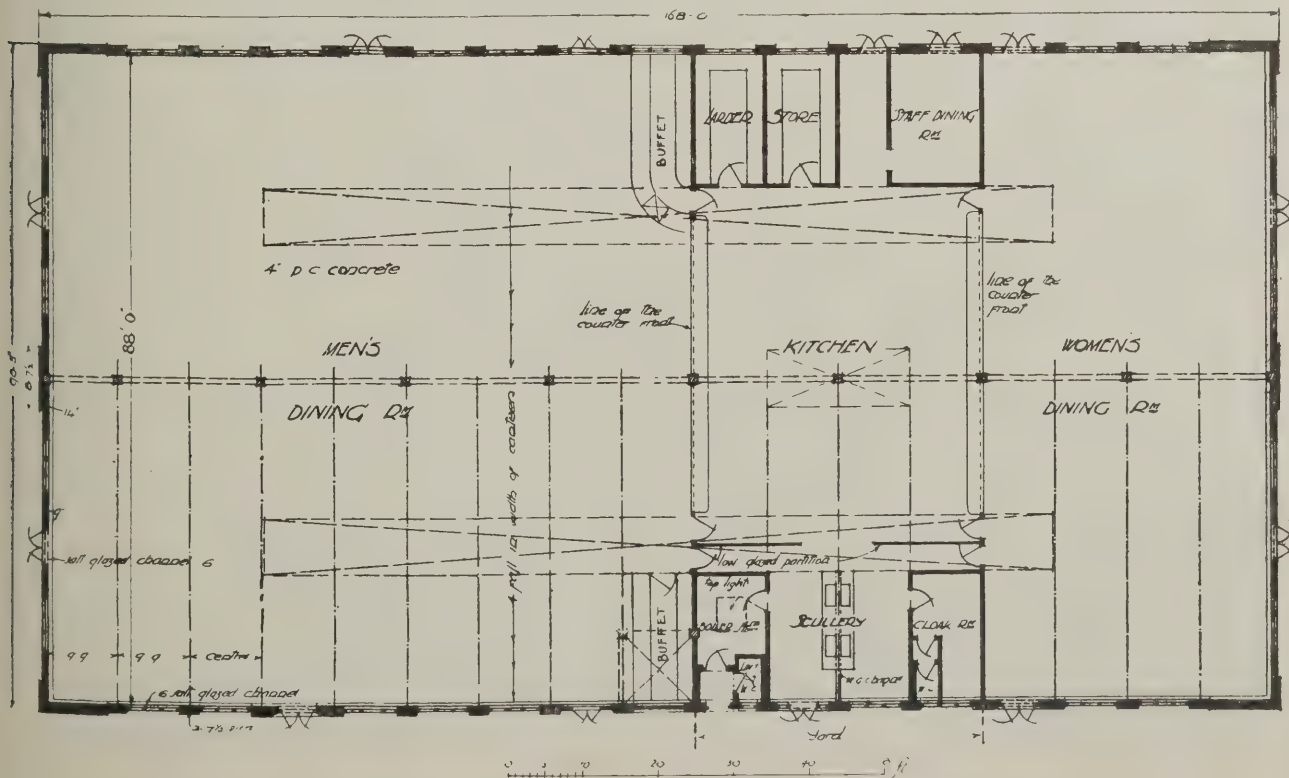
THE employment of hundreds of thousands—even millions—of men and women in munition works, war factories, and other similar centres of industry has created many new problems, among them being the provision of canteens where meals can be served rapidly and in pleasant surroundings. It has long been proved that workers must have good food, well cooked, and be able to take their meals in comfort if the highest output is to be secured, and the pressure of work

in industrial centres since the War broke out has made this fact abundantly plain. Hence the provision of a well-appointed canteen in every works of any size.

In this connection we may quote the following from a report on industrial canteens by the Health of Munition Workers Committee appointed by the Ministry of Munitions:—

"The committee have been impressed with the consensus of opinion which they have received as to the substantial advan-

tages both to employers and workers following the establishment of an effective and well-managed canteen. These benefits have been direct and indirect. Among the former has been a marked improvement in the health and physical condition of the workers, a reduction in sickness, less absence and broken time, less tendency to alcoholism, and an increased efficiency and output; among the latter has been a saving of the time of the workman, a salutary though brief change from



CANTEN "A": FOR 1,200 WORKERS. A. ALBAN H. SCOTT, ARCHITECT.



the workshop, greater contentment, and a better midday ventilation of the workshop. The committee are satisfied that the evidence of these results is substantial, indisputable and widespread."

We propose to show representative examples of what has been accomplished, and with this first article we illustrate four canteens which have been carried out to the designs of Mr. A. Alban H. Scott, of London. As it is not permissible for us to state where these canteens are situated and to which works they are attached, we have designated them A, B, C, and D. A accommodates 1,200, B 470, C 350, and D 700 workers.

#### *Walls.*

The walls in all four cases are constructed of brick, in a substantial manner, and the window openings are filled with wood sashes, which are made to open, in order to provide ample ventilation.

#### *Colour Schemes.*

Although it may seem a small point to many people, the colouring scheme in canteens is really a matter of importance. A cheerfully coloured and well-kept building is not only appreciated by the users, but has the most material effect upon their general spirits. The colours used should be bright, but not offensive, and wherever the circumstances permit it is far more economical in the end to have the whole of the walls and internal work enamelled throughout, so that it can be kept perfectly sweet and clean, added to which is the merit that no annual redecoration is required. As an illustration, it may be stated that the walls of the dining-rooms in the canteen illustrated on the preceding page have a 4 ft. 6 in. painted dado, with cream distemper above, the walls to the

kitchen, scullery, store, and larder being painted.

#### *Floors.*

The floors, which in canteen work form one of the most difficult problems to settle, have in these buildings been constructed of various materials. In all there is 6 in. of concrete to the floor, this being finished in some cases with  $\frac{3}{4}$  in. mineral rock asphalt, and in others with cement screeding and linoleum laid direct. Metallic paving has also been used, and wood block flooring for certain portions. It has been found, however, that a wood floor in a canteen is not the most serviceable arrangement, for unless there is an excessive amount of scrubbing and cleaning the floor after a certain time becomes so impregnated with dirt and small particles of food that no amount of scrubbing and cleaning will make the room perfectly free from objectionable smell.

In one of the canteens shown provision has been made for a hose to be turned over the whole of the floor, the water being drained to scuppers in the external walling and collected by gulleys on the outside; in another case a white glazed channel is put around the building next the external walls, so that the floor can be squeegeed down, the channel allowing hot and cold water to be obtained practically at any desired position and also serving to take away the waste water.

#### *Roofs.*

With regard to roofs it may be noted that where a light steel truss cannot be used in this class of work it is generally found that a Belfast truss, properly designed, is most suitable, but when this is designed to take the same super-load with the same factor of safety as the ordinary

shaped trusses there is, perhaps, not such a deduction in cost as one would anticipate.

The covering to the roofs of canteens presents difficulties in certain districts with the local councils, as they will accept practically no materials except those similar to corrugated iron as a roof covering unless the roofing material is covered on the external side with some additional material, such as cement rendering, which in one particular district the Council required to be 2 in. thick, but eventually passed the plans subject to the roofing material being used only for the duration of the War, after which they would require corrugated iron or some similar material to be fixed!

#### *Ventilation.*

The design and construction of canteens should be such that the ventilation is adequate during hot and muggy weather. The problem is to provide sufficient ventilation during the time the rooms are occupied by a larger number of people and yet at the same time to obtain a more or less equable temperature whilst meals are being prepared. It has been found that roof louvres are one of the best forms of direct ventilation possible in a building of this sort, with movable canvas screens arranged so that the ventilation can be easily and quickly adjusted to suit the various requirements during each portion of the day.

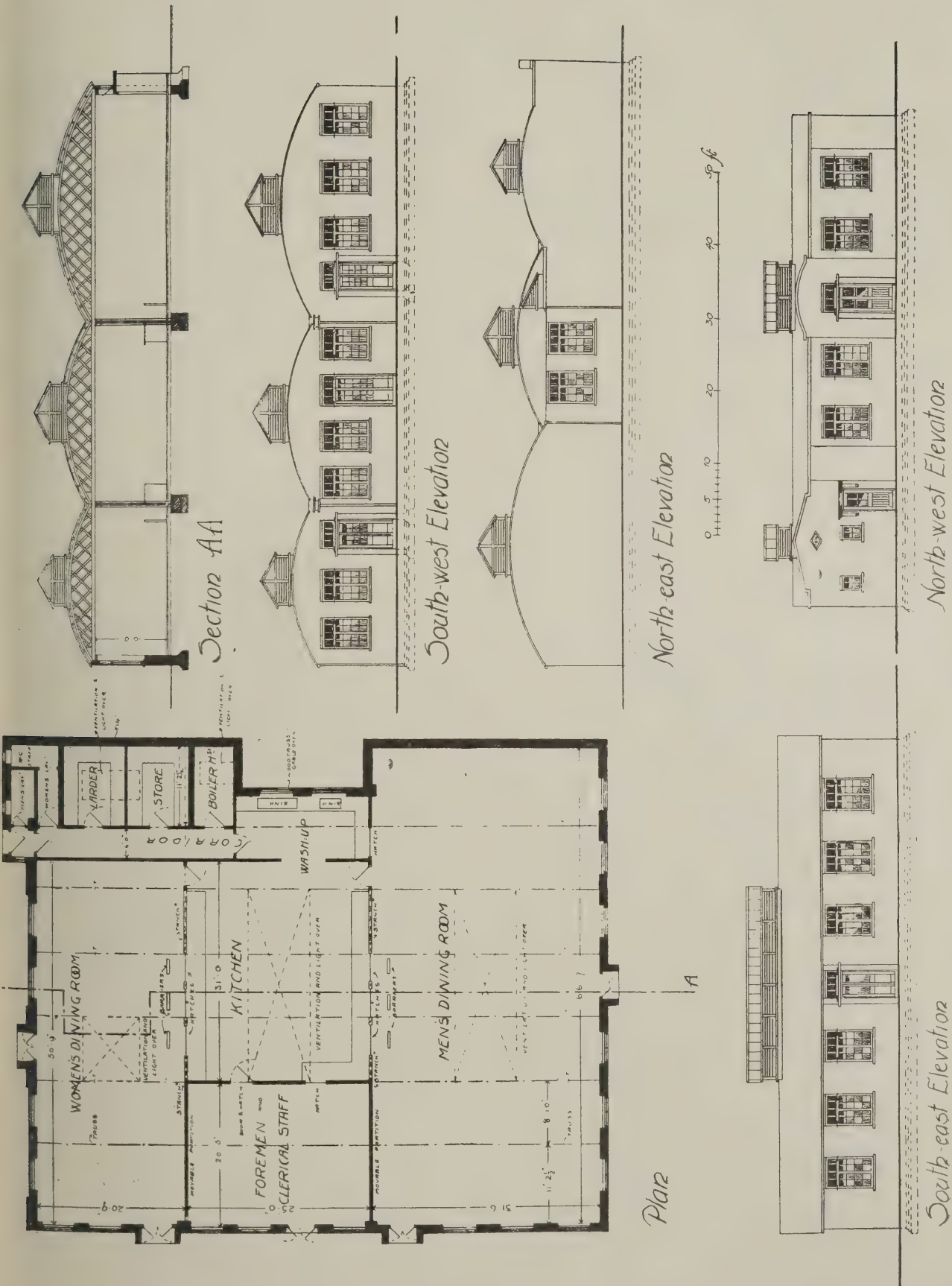
#### *Heating.*

The question of the cost of heating a canteen is one that requires careful attention; even if night shifts are worked, the rooms are only used (except for the preparation of food) during a comparatively small number of hours per day, and consequently the heating should be so regulated



CANTEEN "B": FOR 470 WORKERS. A. ALBAN H. SCOTT, ARCHITECT.





CANTEEN "C": FOR 350 WORKERS. A. ALBAN H. SCOTT, ARCHITECT,

lated that it is not necessary to heat up to a fairly high temperature an enormous cubic extent for no useful purpose. In large canteens therefore it is generally desirable to arrange for at least two temperatures to be readily obtainable. This can be attained by a hot-air system, and if the fan is electrically driven it only requires a two-speed motor to give not only the varying temperatures but also the necessary changes of air per hour. When the canteen is only occupied by workers preparing food, the changes of air required will only be about once or twice per hour, whereas during the period of full occupation the number of changes will probably need to be four or six per hour.

The cost of hot-air heating, with properly arranged underground ducts, is not considerably higher than that of a low-pressure hot-water accelerated system, and where conditions vary it will be found to

be probably the most suitable form of ventilating and heating.

#### *Artificial Lighting.*

The artificial lighting of canteens should be arranged so that there is no direct light, but indirect lighting throughout, which, with the fittings at present on the market, costs little more than the ordinary drop pendants with lights fully exposed to the eyes.

#### *Kitchen Equipment.*

The method of serving meals to workers and the method of payment for the same have a considerable influence on the planning, but of all controversial points in canteen construction there is none greater than that of kitchen equipment.

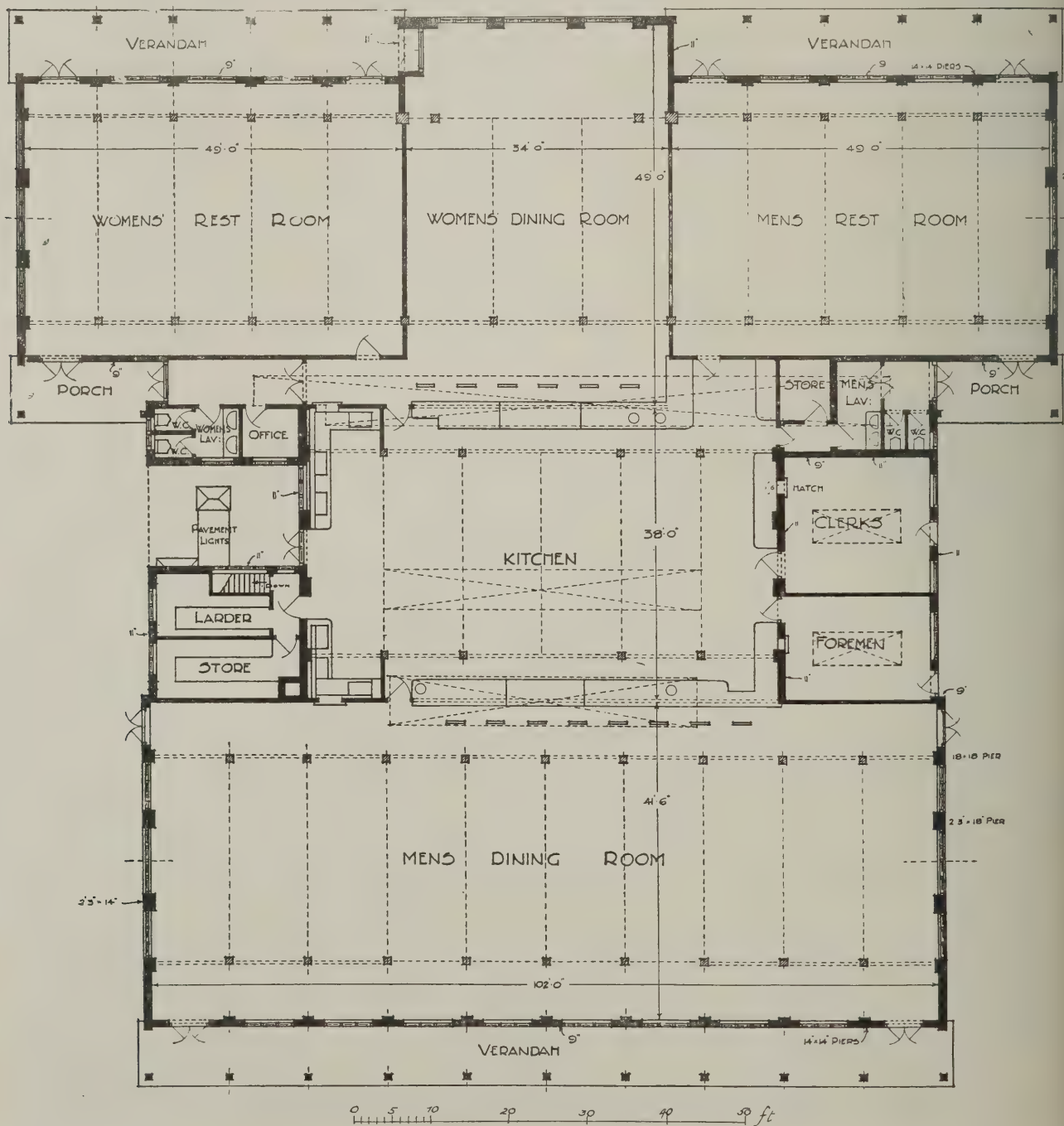
In equipping canteens it should be borne in mind that although one person holding

strong views may be in charge of quite a different person may be employed to-morrow, and they do not always take into consideration the relative value between capital cost of equipment and running cost.

In one of the canteens here illustrated a complete electrical installation is in for all purposes of cooking. In another case the system is largely a gas equipment supplemented by steam. In another steam predominates, supplemented by gas. In the fourth case the mechanical equipment is still under consideration.

Undoubtedly steam provides one of the most economical means of cooking, is held by some that nothing equals electrical cooking, both as regards the itself and the cleanliness and convenience in working.

In later issues we shall publish information on this subject.



CANTEEN "D": FOR 700 WORKERS. A. ALBAN H. SCOTT, ARCHITECT.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

FEBRUARY 28, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1156.

PHOTOGRAPHS of architectural work are to be admitted to the Royal Academy's summer exhibition this year, and as to the wisdom of this there can hardly be two opinions. It should have been taken years ago, as its effect must be to give specific character to a section of the exhibition that is languished because its object has been misunderstood by the general public, and seems indeed to have been curiously misconceived, or but dimly discerned, by the majority of the hanging committee. Certainly it should have been always perfectly obvious that the primary object of an architectural section was not the making of pictures, but the representation of architecture; but men to whom the making (and incidentally the selling) of pictures are the alpha and omega of existence, may be excused the obsession which they have thus tardily shaken off.

From Lionardo to Inigo Jones, Canina, Piranesi, Couture, Brewer, down to the many accomplished architectural painters or draughtsmen of to-day, pictorial representation of architecture has never lacked admirableponents; and the stress laid on it in the French and American ateliers, and more recently in some of the British schools, is no doubt firmly based on clear recognition of the elevating reflex influence of finished and effective draughtsmanship on design. It is a legitimate application of pictorial art, but it need not and should not exclude the more humble but more facile services which the camera can render to the Mistress of the Art. Skill in painting or drawing does not necessarily coincide with meritorious architectural design, and it follows that while probably much good work has been neglected for feebleness in the delineation, much assessing but little architectural merit has been accepted on its sheer pictorial value. For a hanging committee consisting mainly of painters, a showy perspective would be irresistible. The admission of photography will help to correct this false criterion.

A bad drawing of a good building, or a fine drawing of a bad building—the one combination being almost as possible as the other—must often have placed the hanging committee in an awkward dilemma. Photography comes to their rescue. There will be hardly any temptation to judge it as “Thing in Itself,” as the philosophical jargon phrases it; and its admission will increase enormously the value and interest, both qualitatively and quantitatively, of the architectural section of the exhibition, which department has for the first time the opportunity of becoming architecturally representative. Many excellent architects have either the time nor the inclination to achieve the Academy standard in graphic illustration of the buildings which, as the Academy has at length recognised, are, after all, the architect's true medium of expression. That this admission of the camera will greatly discourage draughtsmanship we do not believe, for, as we have already hinted, the artistic *projet* has a distinctive value that is clearly recognised and cannot be superadded. Why, however, is the extraordinary size of 8½ in. by 8 in. prescribed? It is a strange hybrid. The nearest commercial or standard sizes are 12 in. by 10 in. and 10 in. by 8 in.—the latter more popular in America than in this country. We would suggest, therefore, the admission of the popular “whole-plate”—

8½ in. by 6½ in.—but at least the dimensions should be those to which British photographic plates are usually made, and we are at a loss to understand why an “off” size should be specified.

Mr. Ernest Newton's short speech introducing to Mr. Neville Chamberlain a deputation of architects anxious to assist him in his great work of organising national service was a model of clearness and conciseness. There was not a superfluous word in it, and at the same time it omitted no vitally important point. The skill with which he stated his case was probably acquired through incessant practice. Ever since the war began he has been instant in urging the Government to avail itself of the national services which architects are able and willing to render, but hitherto the Government has not seen fit to make use of the knowledge and experience thus freely placed at its disposal. Consequently there has been, as Mr. Newton said, much waste and delay from which the State could have been saved. Apparently, however, there was no State Department to which such application seemed particularly pertinent—everybody's business was nobody's. Now, however, that a special Department of National Service has been created, and that Mr. Newton is backed not only by his own Institute, but by representatives of affiliated and cognate bodies, we may surely anticipate with confidence the prompt utilisation of services that may yet be of inestimable value to the State.

Viscount Midleton was no doubt fully justified in asking, in the House of Lords last week, for a return of the estimated cost of all buildings recently erected or projected for use as Government offices; and Earl Curzon, replying for the Government, was equally justified in refusing to enter into particulars. This may seem paradoxical; but the point is that in these critical times much public anxiety is allayed by soothing replies to alarmist inquiries, and that is the net effect in the present instance. In stating that in the last two years “the Government had taken up in London alone eight hotels, two clubs, a town hall, and fifty other buildings,” while wooden buildings were being erected all over London—more than fifty thousand pounds having been spent on buildings in St. James's Park, and sixty thousand pounds on buildings in Regent's Park—Lord Midleton was no doubt actuated rather by a desire to have these things officially explained and expounded than by any very sanguine hope of immediate retrenchment and reform. He is no doubt aware, also, of the public utility of an occasional reminder to the Government that the people are keenly observant of its doings, and of the value to it of occasional criticism that is not unfriendly, but is, indeed, quite the reverse. Lord Midleton's statement that wooden buildings are being erected all over London is less true to-day than it would have been a few months ago. We are glad to see that in the more recent erections some of “the newer materials of construction” are being adopted. Concrete is being more freely used, and in some instances certain well-known patent building blocks are employed for the external walls, rendering the buildings at once more pleasant in appearance than mere woodwork could be, and infinitely more weatherproof and fire-resistant.

## HERE AND THERE.

FROM paragraphs in the newspapers we have remarked that *Vorwaerts* has developed the unfortunate habit of getting itself suppressed from time to time. On emerging from such enforced oblivion, it goes on in a properly chastened spirit for a while, and even says things about ourselves which are sufficiently abusive to merit the approval of a Junker, but after a month or so of such excellently Prussian conduct it lapses again—suggests, perhaps, that the English are not quite so effete as the gentle Reventlow has said, or that Germany's future may really be under the sea if U-boat frightfulness is persisted in—and then, once again, the Military Censor suppresses *Vorwaerts*. Fortunately, my own disappearance from these columns for the past five weeks has been due to no such transgressions, but rather to an additional pressure of work that quite precluded any attempt on my part to fill the allotted space. Meanwhile, several events of interest in the world of architecture and building have occurred, and if it were my duty to maintain in these columns a current chronicle I should have to say something, for instance, about the Great Explosion and the wonderful appearance of the buildings in the shattered area; to pay a tribute to the felicity and literary several events of interest in the world of architecture than I can ever hope to be—the late Mr. March Philipps; and to pay another tribute to the late Mr. E. R. Robson, the creator of a type of London Board School which stands to-day far ahead, in character, of the bulk of more recent work of the same kind; while, bringing my chronicle right up to date, I should be clamorous to comment at some length on the announcement that the holy of holies of the perspective draughtsman—the Architectural Room at the Royal Academy—was this year, for the first time in its academically dull history, to be enlivened by photographs (this indeed is a veritable revolution; for which, as the new form of grace runs, may the Lord, Devonport, make us truly thankful). But with others lies the task of a regular chronicle. My own is that of a discursive writer who chooses to touch upon anything of interest that may properly be included in these columns. For my present purpose, therefore, let me take good precedent for a bad principle which I wish to act upon.

The good precedent is illustrated by an incident in the career of Richard M. Hunt, he who, in the 'nineties, evolved a kind of American Romanesque which, if it did not form a basis for the scholarly architecture that has since attained to so high a standard in the United States, at least claims our respect as the work of a vigorous architect possessing marked individuality. It was Mr. Hunt's custom to make charcoal studies of interior details, full size, and for this purpose he had prepared in a room of the New York State Capitol, where he was engaged, a long wall space with a running board from which to work. One morning Mr. Hunt, clad in a long linen overall to protect his clothes from the charcoal, was busily employed upon some details, when, unbeknown to him, someone gained access to his room, and the following dialogue ensued:

A Voice: "Is this Mr. Hunt?" Mr. Hunt, continuing his work without looking around: "Yes, I am Mr. Hunt; what can I do for you?" The Voice: "Well, Mr. Hunt, what do you know about acoustics?" Mr. Hunt, still absorbed in his work: "I guess I know as much as anyone, and that's damned little." The Voice: "Well, Mr. Hunt, I think you are the man I am looking for. I wish to

build a large church, and I am looking for an architect who will acknowledge he knows nothing about acoustics. My name is Henry Ward Beecher."

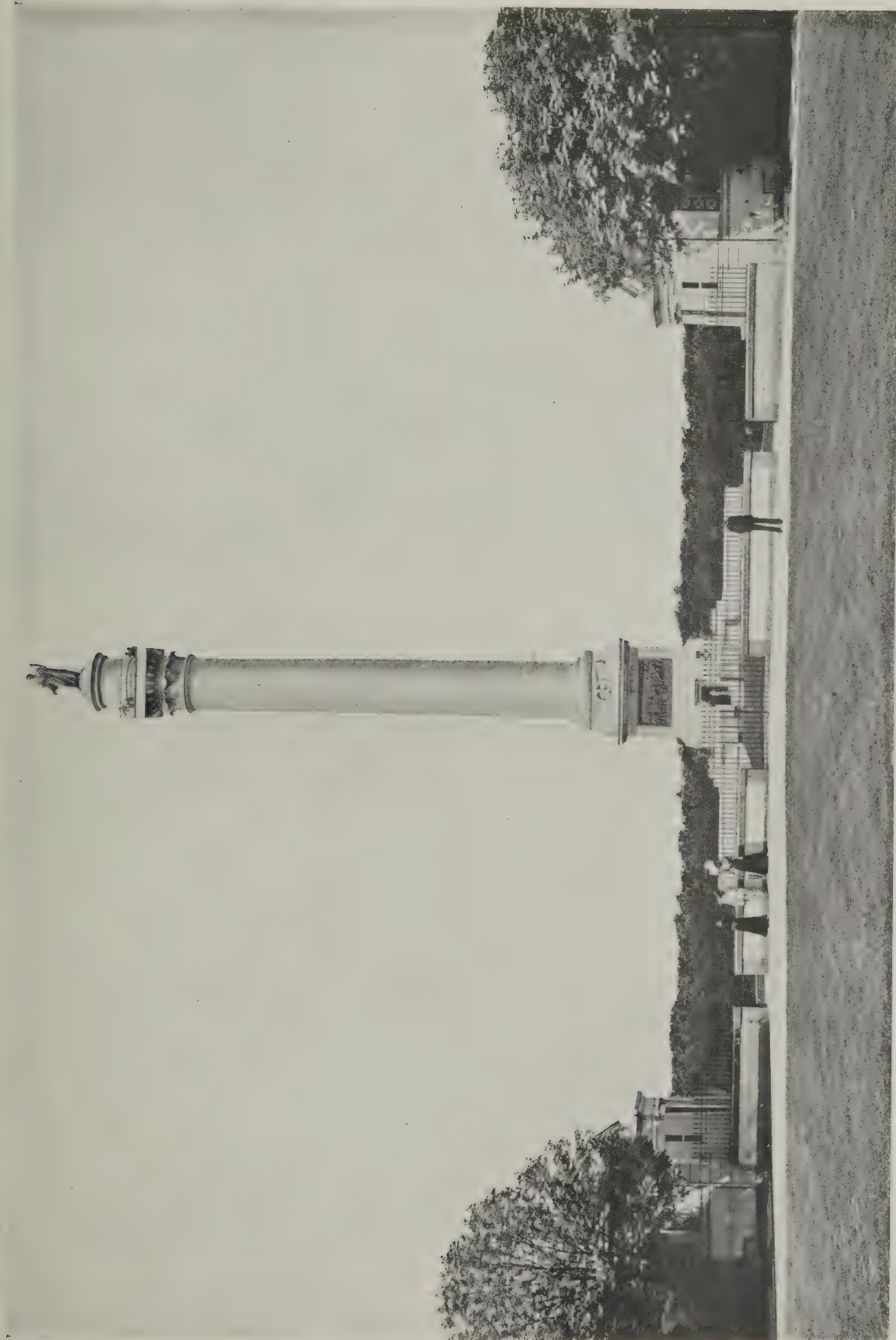
Nobody, of course, knows anything about acoustics, except Professor Sabine; it is one of the riddles of life, and that the Hull City Council at every moment should be sore troubled about reverberation in their Council Chamber is another instance of the fact. It is not my intention, however, to write about acoustics. I wish to deal with a matter of which I am equally ignorant—the purification of water for military camps.

Architects, in the course of their ordinary professional career, are supposed to be informed concerning sanitation (including water-supply), many know, or are likely to know, something about camps. It may be, of service, therefore, to set down a few facts about chlorine. The Germans use this, in the form of gas, to poison our splendid fellows in the firing line, but they, and we too, use it, in the form of a powder, to purify our water supplies. I could relate how, in the early days of the War, at a certain military base in France where the town supply of water was questionable, all the water was chlorinated at an allotted number of sanitary posts, i.e., stand pipes to which military water carts—in this case French water barrels—drove up and received first an exact measure of chlorine in stock solution and then a fill of water, "and so home"; or how at another place in France there was every afternoon a "chlorine parade," when several thousands of files filed past a long table whereon was set a row of jars containing chlorine solution with wooden skewers which the men, in turn, took up and thrust with let so many drops fall into their water-bottles. To-day there are less elementary methods, the army being equipped with chlorinating carts galore, and to this use of germ-freed water we may attribute in large measure the general freedom from epidemic which our soldiers enjoy.

The ordinary soldier to-day drinks his water as gets it, relying on what others have already done for him, but he may happen to be cut off from the water supply, and it would be well then if he knew how to sterilise his own water-bottle in a very simple, and effective way (assuming that he is in such a situation that he cannot get boiled water). In the Army they issue little boxes of bleaching powder, French for which is *chlorure de chaux*, and bleaching powder contains chlorine to the extent of one-third of its weight. In the box is a tiny spoon that holds, when level-full, two grams. This quantity is mixed with a little water into a paste, and more water is added to make a pint (if the spoon is missing, three times the amount of bleaching powder that will stand on a sixpence, or four times what will stand on a 50-centime piece, gives the same two grams required). This pint forms the stock chlorine solution; it should be kept in a covered bottle free from light, and will then remain good for a fortnight. To sterilise a soldier's water-bottle it is necessary to take the stock solution and let the drops fall in from a wooden skewer (if the water is clear; six drops if turbid), to fill the bottle, cork and shake it, and let it remain half an hour. The water is then perfectly safe to drink, being freed from all germs of diphtheria, cholera, and enteric fever, and in the matter of taste cannot be detected from untreated water which may have enough deadly germs in it to kill an army corps. If only this had been generally known in the South African War!

UBIQU



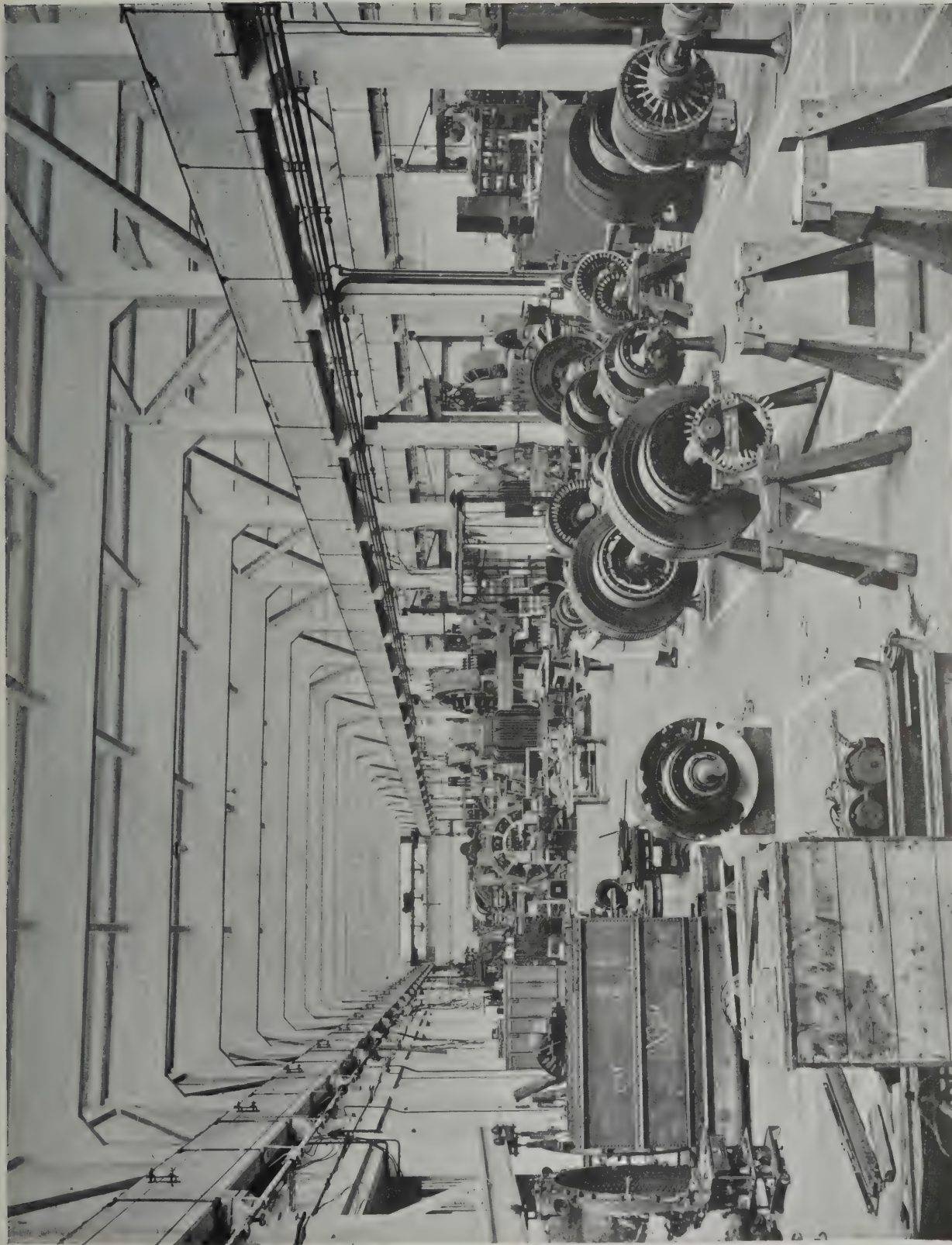


COMMEMORATIVE COLUMNS AND OBELISKS. IV.—COLUMN OF THE GRAND ARMY. BOULOGNE.

HENRY AND DE LA BARRE, ARCHITECTS.







MODERN INDUSTRIAL BUILDINGS. V.—AN ENGINEERING SHOP.

A. ALBAN H. SCOTT, ARCHITECT.







MODERN INDUSTRIAL BUILDINGS. IV.—ERECTING SHOP OF A MOTOR CAR WORKS.

A. ALBAN H. SCOTT, ARCHITECT.

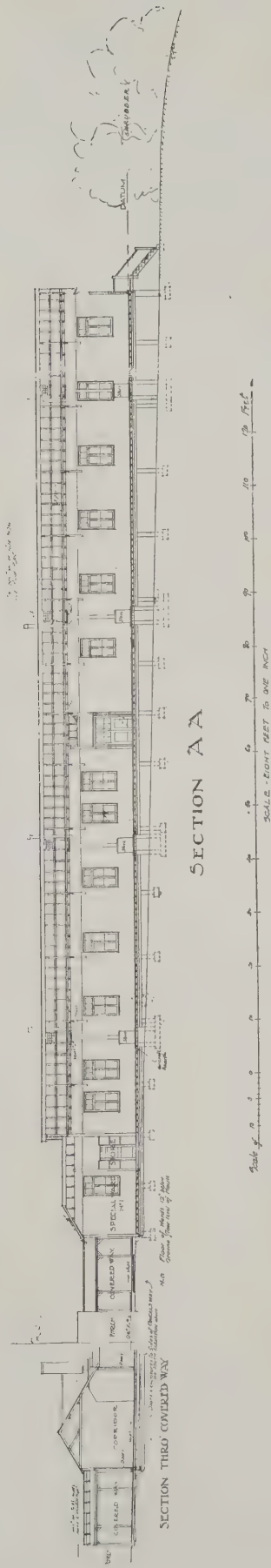
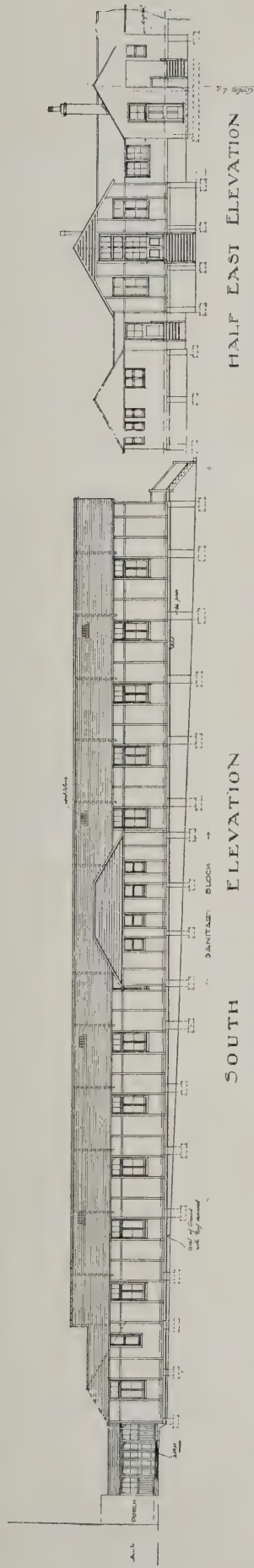




THE QUEEN'S CANADIAN MILITARY HOSPITAL  
BEAUCHAMBER PARK, SHORNCLEIFFE, KENT

NOTE: All dimensions for setting out to be taken from this actual working

NO. 217 1917  
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CURRENT ARCHITECTURE (SERIES IV.). XIV.—QUEEN'S CANADIAN MILITARY HOSPITAL, SHORNCLEIFFE, KENT.  
W. HENRY WHITE, F.R.I.B.A., ARCHITECT.





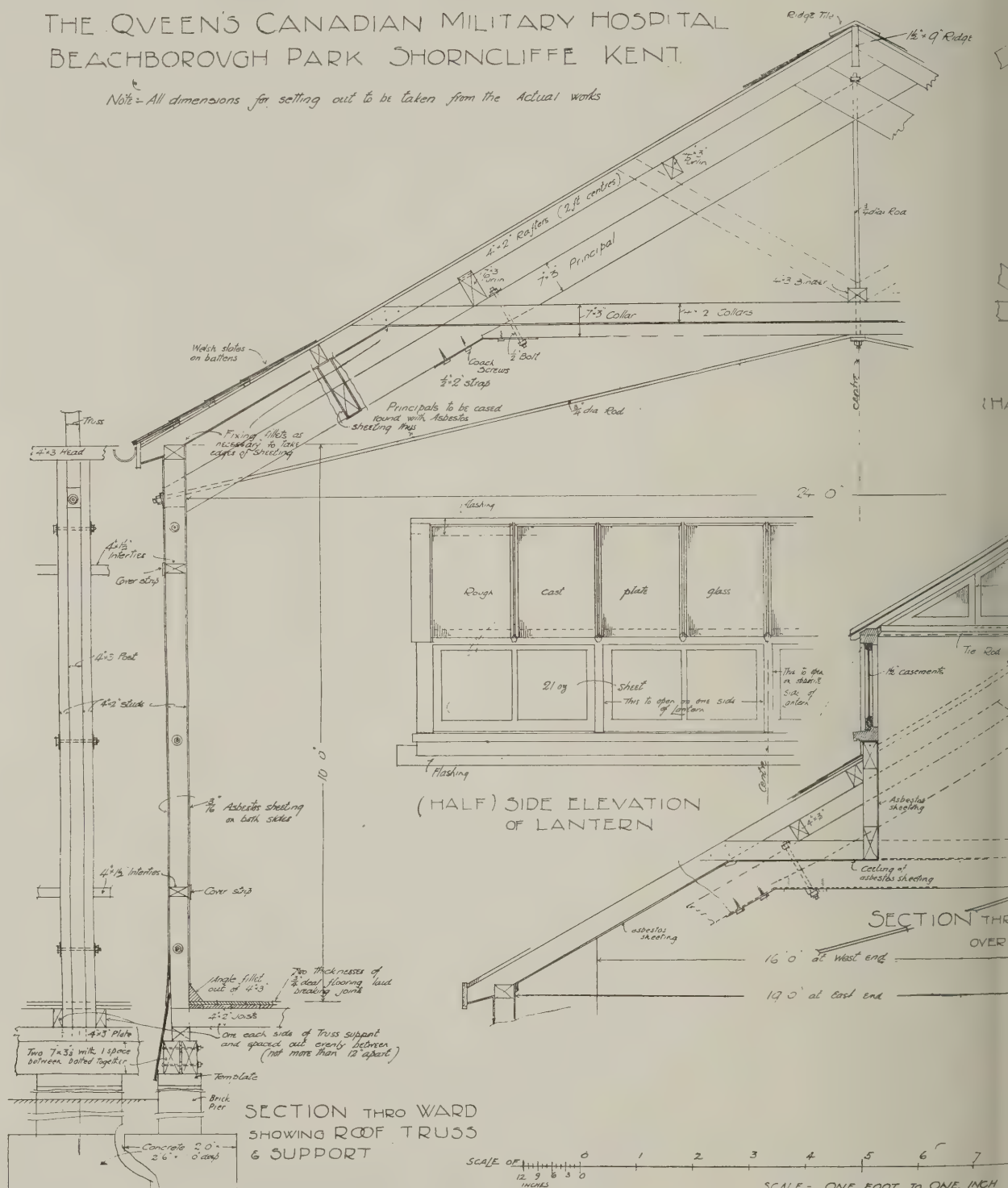
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MAY 22 1917

LIBRARY  
OF THE  
UNIVERSITY OF ILLINOIS

# THE QUEEN'S CANADIAN MILITARY HOSPITAL BEACHBOROUGH PARK SHORNCLIFFE KENT.

Note: All dimensions for setting out to be taken from the Actual works



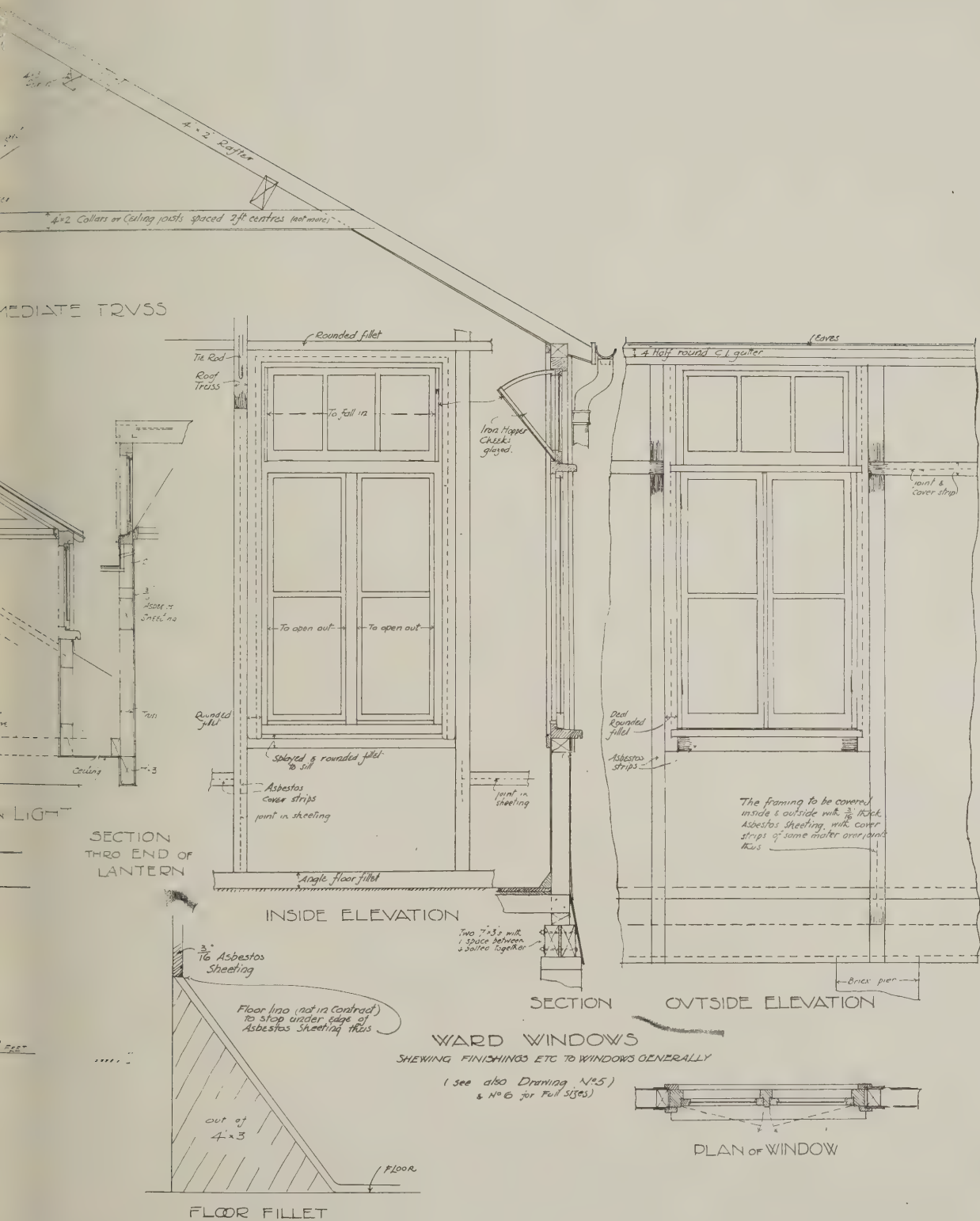
OUTSIDE ELEV. OF  
PIER & SUPPORT UNDER  
ROOF TRUSS  
(Asbestos sheeting not shown)

DETAILS OF ROOFS ROOF TRUSSES & WARD WINDOWS  
INCH SCALE

ARCHITECTS' WORKING DRAWINGS (SERIES II.). XXXV.—QUEEN'S CANADIAN

W. HENRY W





TAL, SHORNCLIFFE, KENT: DETAILS OF ROOF AND WINDOW CONSTRUCTION.

ARCHITECT.





## ARCHITECTS AND NATIONAL SERVICE.

*Deputation to Mr. Neville Chamberlain.*

ON Wednesday last, February 21, at the St. Ermy's Hotel, Westminster, Mr. Neville Chamberlain, Director-General of National Service, received a deputation of architects, including Mr. Ernest Newton, A.R.A., president R.I.B.A.; Sir Aston Webb, K.C.V.O., C.B., R.A.; Sir John Burnet, L.D., R.S.A., vice-president R.I.B.A.; Sir Ernest George, F.R.I.B.A.; Mr. Reginald Blomfield, R.A., R.I.B.A.; Mr. Paul Waterhouse, vice-president R.I.B.A.; Mr. H. V. Lanchester, vice-president R.I.B.A.; Mr. E. Guy Dawber, hon. sec. R.I.B.A.; Mr. Percy Tubbs, F.R.I.B.A.; Mr. John B. Gass, R.I.B.A., president of the Manchester Society of Architects; Mr. W. A. Harvey, president of the Birmingham Architectural Association; Mr. A. B. Burgh, president of the York and East Yorkshire Architectural Society; Mr. A. F. Watson, F.R.I.B.A., president of the Sheffield Society of Architects; Mr. Lennox Robertson, F.R.I.B.A., president of the South Wales Institute of Architects; Mr. T. Forbes MacLennan, A.R.I.B.A., president of the Edinburgh Architectural Association; Mr. A. G. R. Mackenzie, R.I.B.A., president of the Architectural Association; Mr. Edwin J. Sadgrove, F.R.I.B.A., president of the Society of Architects; Mr. A. Alban H. Scott, vice-president of the Society of Architects; Mr. Basil Champneys, Mr. W. H. Cowlshaw, and Mr. F. J. Hills, representing unattached architects; and Mr. H. Martineau Fletcher, F.R.I.B.A.

Mr. Ernest Newton, in introducing the deputation, said: "The deputation which I, as President of the Royal Institute of British Architects, have the honour of introducing is representative of the whole profession of architecture throughout Great Britain. Our object in coming is twofold: First, to indicate briefly the services we believe we can render to the State; and, secondly, to offer these services and the whole machinery of our organisation in order to render them readily and easily available. Other speakers will go more into detail in regard to the specific services which architects can render, but I should like, as a preface, to make clear what is not, I think, generally understood, that the profession of architecture is essentially practical, and, although individually we may specialise more or less, collectively our work includes everything directly and even remotely connected with building. We are accustomed to surveying, estimating, assessing value, and to the supervision of works of all kinds. We are familiar also with the construction of large and complicated factories of every description, as well as public buildings and houses. As men of affairs and judgment we have to see that all these buildings are set up with a proper regard to economy in cost and arrangement. At a time, such as the present, when our knowledge and experience should have been of the greatest value to the State, and would have saved delay, mistakes, and much waste of money, we have as an organisation been made no use of. It is now late in the day, but believing that in organising the man-power of the country it is more practical and economical to put men to work, so far as possible, which their training and experience enable them to do, we have asked you to receive this deputation, which offers you this skill and experience to make the best use of what may be possible in your scheme of organisation. I am also asked to say that we shall be glad to submit a practical scheme for your consideration to assist in any way you may indicate."

Mr. Reginald Blomfield, Mr. John Gass, and Sir Aston Webb then spoke, after which Mr. Neville Chamberlain replied, promising that the case presented could receive careful consideration.

## THE PLATES.

*Column of the Grand Army, Boulogne.*

THE dominating theme of this imposing column, 178 ft. high, is Roman Doric in character, but the design is essentially French. The column was begun in 1808 under the direction of two architects, De la Barre and Henry, but it was not completed until 1840. De la Barre was only responsible for the work in its preliminary stages, the task of detailing and finishing the structure having been achieved with much distinction by Henry. The general effect of the monument is particularly successful, on account of the study given to its setting, with the supporting lodges and railed enclosure that introduce the column to the platform on which it stands, and obviate an effect of startling abruptness which so often results when a vertical object is set in the midst of a public place without consideration of essential accessory features. The apportioning of the mouldings and the treatment of the ornament are alike highly original, and the cast-bronze door in the pedestal (of which we published an illustration in our issue for April 21, 1915) is one of the finest examples of its kind. The French fully understand the value of mass in their monumental work, but they seldom make the mistake of leaving a structure comparatively naked, as Wyatt did when he executed the Duke of York's Column.

*Erecting Shop of a Motor Car Works.*

As the illustration shows, this is a particularly fine example of a modern factory interior, admirably lighted and equipped. The shop has an area of 23,760 ft. super without internal columns. The main structure is a steel-framed building with steel-work roof having a span of 70 ft., the underside of the trusses being formed to take light travelling runways. The roof covering is of wood boards, felt, and mineral rock asphalt. The wall panels are filled in with sashes and 9-in. brick walls. The floor is formed of 3-in. creosoted wood blocks. Mr. A. Alban H. Scott, of London, W.C., was the architect.

*An Engineering Shop.*

This is one of the finest heavy engineering shops in the kingdom (we are not permitted to state its locality). The structure is entirely of reinforced concrete, and has an area of about 60,000 ft. super. It is divided into two longitudinal bays, each of 50 ft. span, the total length of the shop being 600 ft. A plan is given on page 116. The roofs, as shown by the section, are of north-light type. Mr. A. Alban H. Scott was the architect.

*Queen's Canadian Hospital, Shorncliffe.*

This is described in the article on page 111.

## ROYAL ACADEMY AND ARCHITECTURE.

*Important Announcement.*

WE are informed by the secretary of the Royal Academy of Arts that, by a special regulation, photographs of architectural work will be admissible for this year's exhibition at Burlington House. The size of the photographs must be not less than 12 in. by 8 in.; they should be framed in slight wood frames with or without mounts, which may be tinted. The buildings shown must have been erected within the last ten years. More than one photograph of the same building may be included in one frame.

Photographs of architectural sculpture will also be admitted under similar conditions.

[For Editorial comment on this important announcement, see p. 105.]



## THE QUESTION OF WAR MEMORIALS.

The committee of the Civic Arts Association (28, Prince's Gardens, S.W.) have recently been considering two important questions connected with War memorials, namely, the question of commissions for such memorials in relation to artists now at the Front, and the artistic difficulty presented by the attachment of any large number of names to a work of art. They have accordingly decided to circulate the following note in the hope that it contains a suggestion which may be useful to the public:

Owing to the absence of nearly all our younger sculptors and craftsmen on active service, it is desirable that the execution of memorials to the fallen should be, as far as possible, postponed until the conclusion of the War, when it is hoped we shall have among us again those artists of genius who have temporarily sacrificed their art for the nation's cause. To such as these, opportunities for resuming the exercise of their profession will be doubly welcome, and inasmuch as a work of art consciously or unconsciously reflects the spirit and experiences of its creator, we may reasonably hope that the artist who has tasted the solemn glory of the battlefield will thence derive noble inspiration for the creation of War memorials. Artists who are, unhappily, over military age, will assuredly welcome the reservation of commissions in order to assist their brethren on their return to civil life; indeed, the volume of memorials, sadly increasing, is already of such magnitude that the artists still among us are unable satisfactorily to cope with the demand.

Meanwhile, the natural desire straightway to commemorate our young men's sacrifice may be met by placing a wreath, with a scroll of honour attached, on the position assigned to the memorial in church or public edifice; or a memorial book containing their names might be written, and either form in itself a sufficient and satisfactory memorial, or be auxiliary to any other to be subsequently decided upon. Places of worship, town halls, and public libraries will afford suitable depositories for memorial books of this nature. All such scrolls and books should be written in comely script—themselves works of art—and, for this purpose, use might be made of the students of our technical schools who have been trained to do such work with simplicity and dignity.

These suggestions will not hinder the planning of more conspicuous or more permanent memorials. On the contrary, time and opportunity will be afforded for careful estimation of the funds available, as well as for due deliberation in the choice of the location and character of such memorials, to the no small relief of incumbents and others who are already concerned with the menace to the walls of their parish churches of a crowd of hasty and ill-assorted tablets and stained glass. Moreover, long inventories do not lend themselves to certain memorials—such, for instance, as a village cross, fountain, or wall seat, and the business of cutting or painting these is complicated by the need of leaving a space for more names to come. A few blank leaves in a book, or a space on a scroll, would sufficiently meet this difficulty, and on the permanent memorial itself, if suitable, some few words might be inscribed to the effect that it is erected "in memory of those of this parish," or, as the case may be, "who gave their lives

for us in the years 1914, etc., etc. Their names are written in the memorial book of our church," or "town hall," as it may happen to be.

## GLASGOW CATHEDRAL.

Mr. T. L. Watson, F.R.I.B.A., in an address upon "Glasgow Cathedral in the Thirteenth Century," delivered to the members in the Edinburgh district of the Scottish Ecclesiological Society, said the Cathedral of Glasgow was a page of history. It differed essentially from other cathedrals in the possession of an upper and lower choir, and in the unusual method followed in its construction, which was such that successive phases of architectural style were fully displayed and contrasted. Above all, it offered a unique example of an earlier plan supplanted by a later, but in such fashion that both might be read as in the earlier and later manuscripts of a palimpsest. The key to the history of the building would be found in the fact that the lower aisles and the adjoining middle compartment were of different periods, and that in the interval that elapsed between them the entire fabric of the choir above the level of the lower church was constructed. During this interval architectural style had developed from an early and immature condition into the perfected Gothic Art of the thirteenth century, so that there were two widely different styles in immediate contact with one another, but so well harmonised that their difference of date was not recognised until about thirty years ago. When the lower church was built there was of necessity a plan of the whole vault, but this was carried out only so far as the lower aisles, the outer springer-stones of the middle compartment, and a bridge of communication between the upper aisles. When, therefore, on the completion of the choir and clerestory, the builders returned to the middle vault and decided upon an entirely new plan, they had to alter the old springers or replace them with others, to adapt them to the later design, and from these altered and renewed springers we were enabled to recover the earlier plan of the vault.

This discovery opened up the history of the structure as by the raising of a curtain. Jocelin's unfinished work of the twelfth century was demolished by Walter, the founder of the existing building, who reserved the portion first constructed as a temporary chapel for the use of worshippers during the erection of the cathedral. Here, accordingly, was found a pillar taken from Jocelin's church, together with a fragment of the temporary altar and shrine of St. Kentigern. On Walter's death the work was continued by his successor, to whom we owe the greater part of the existing choir. The vaulting of the lower aisles was reached about 1240, but the middle and eastern vaults were delayed, the former till 1260 and the latter till 1270, the material for the choir and clerestory being brought in by way of the eastern aisle and hoisted from the middle compartment to its place on the walls. The later plan of the middle vault, dating about 1260, and based upon the chapter-house vaulting of the English cathedrals, was substituted for the original plan of 1240, notwithstanding the fact that it involved a large amount of additional work in the alteration of the early springers. To this we owed one of the greatest curiosities of architectural history, and to Bishop Bondington and those associated with him we owed the possession of one of the noblest buildings in Scotland.

## EXHIBITION OF IRISH BUILDING MATERIALS.

Major Crean, presiding at the usual weekly meeting of the Council of the Dublin Industrial Development Association, announced the satisfactory result of the interview which the Joint Committee of the Royal Institute of the Architects of Ireland and the Dublin Industrial Development Association had with Mr. T. P. Secretary Department of Agriculture, Technical Instruction, in reference to exhibition of Irish building materials, which the help of the Department of Agriculture was sought. Mr. E. St. John Lyburn was present with Mr. Gill.

Major Crean, having introduced the question, stated that the primary object of the Joint Committee was to promote the more general use of Irish materials and employment of Irish artists and craftsmen in the construction and decoration of buildings, and also to bring more closely into touch architects, builders, and building owners on the one hand, and quarry owners, manufacturers, artists, and craftsmen on the other. They considered that an exhibition of Irish manufactures was the very best way of securing the result aimed at, and they sought the assistance of the Department towards providing for such an exhibition in the National Museum.

Mr. Kaye-Parry, President R.I.A., agreed with Major Crean, and addressed himself to the subject of Irish Portland cement, which, he said, required to be manufactured more scientifically, with a view to insuring uniform strength and quality, and he thought the Department might assist in some way in bringing about this desirable improvement. He also referred to constructional steelwork, and thought much could be done in Dublin to foster its manufacture.

Mr. R. Caulfeild Orpen, R.H.A., directed attention to the quality and supply of Irish bricks, which from an artistic point of view he considered required improvement.

Mr. P. J. Lynch, M.R.I., supported other speakers as to the necessity for an exhibition which would include wrought iron, ornamental plaster work, and other details of the interior of buildings.

Professor Scott, F.R.I.A., Mr. Farren, F.R.I.A., and Mr. G. O'Connor, F.R.I.A., spoke of the many difficulties which a permanent exhibition of Irish building materials would involve.

Mr. Gill, on behalf of the Department, stated that he was ready to assist in every way. He instanced the exhibit which the Department had organised in connection with the Cork and St. Louis Exhibition, and promised that the Department would go to work without delay under the direction of Mr. St. John Lyburn, and with co-operation of the Joint Committee, organising as comprehensive an exhibit as possible. They would make an immediate start, and in the course of time would be developed. He also referred to the admirable staff of the College of Science, who were competent and willing to assist in such matters as that of improved Portland cement. Neither was the question of constructional steelwork neglected.

Mr. Kaye-Parry and Major Crean cordially thanked Mr. Gill for his courteous reception and generous response to their request.

[No doubt a permanent exhibition of building materials would be of considerable educational value, provided the interest can be kept fresh. If it is allowed to degenerate into a mere museum, it will greatly aid the desired development.]



## NEWS ITEMS.

*For King and Country.*

Geoffrey Wyville Home, A.R.I.B.A., who enlisted in November, 1914, was gazetted on January 27 2nd Lieut. Royal Garrison Artillery.

*Homes for Wounded Soldiers and Sailors.*

Sixty-six houses are to be erected in the colony for wounded soldiers and sailors at Holbeach Clough, Lincolnshire. Tenders are being invited, and the work is expected to begin in April.

*Women Joiners at the Front.*

A number of women carpenters are being employed in France as an experiment by Messrs. Tarrant, of Byfleet. They are housed in huts, and have a house-keeper and woman supervisor. They do the lighter kinds of carpentry, and their output and pay are about half those of men.

*Re-Building in Dublin.*

Messrs. M'Dowell and Co., jewellers, in Sackville Street, Dublin, have decided to rebuild their premises. Mr. Francis F. Bergin is the architect, and Messrs. Shortall and Co. are the contractors. The firm, it is added, have fallen in with the City architect's suggestions as to co-ordination of designs.

*Waterproofing a Cellar.*

We hear that the cellar under the Essex County High School, at Walthamstow, has given much trouble owing to being constantly flooded. After much expense in trying various means to keep the water away, the county architect decided to use Pudloed cement concrete, which has rendered the cellar perfectly dry.

*War Memorial Chapel for Windermere.*

The Rev. Euston J. Nurse, rector of Windermere, has received an offer from Sir William Forwood, of Bromborough Hall, Cheshire, a visitor to Windermere for over fifty years, to build and furnish a War Memorial Chapel by extending the north aisle of Windermere Parish Church at an estimated cost of over £2,000.

*Official Drawings of Munition Works.*

Mr. Muirhead Bone is now making drawings in various munition works, by permission of the Ministry of Munitions. Some of these illustrations will be included in the next part of "The Western Front." One of the drawings, entitled "The Hall of the Million Shells," shows loaded shells of every calibre being arranged for transit to the Front. Another impressive drawing, called "Mounting a Great Gun," shows a gun of heroic size in one of its latest stages.

*New Building Restrictions.*

In the House of Commons last week Dr. Addison stated that the Order in Council of July last required the issue of a licence for all building work of the value of £500 or over, and for any work involving the use of constructional steel. For the future he was obliged to consider a further limitation of licences, and it would be of great assistance if applications even for small amounts were limited to those required either for urgent repairs or for work of national importance.

*Edinburgh Streets and Buildings Economies.*

At a meeting of the Streets and Buildings Committee of Edinburgh Town Council, on a remit as to what further economies could be effected on the Roads and Burgh

Engineer's departments, it was resolved to visit certain of the streets on which repairs have been authorised to determine whether or not they should be further proceeded with. At present the City Road Surveyor has a staff of over 100 men, and certain members of the committee suggest that several of these might be set free in connection with national work.

*Manchester Old Town Hall.*

With Mr. Gordon Hemm's drawings of Manchester Old Town Hall our readers are familiar. His fine perspective of Francis Goodwin's dignified façade has been added to the permanent collection of the Manchester Art Gallery. We are informed that a limited number of signed artist's proofs of this picture, reproduced by the collotype process, will be offered at half a guinea each. Application should be made to Mr. Gordon Hemm, Fern Lea, Manchester Road, Heaton Chapel, near Stockport.

*Derry Shipyard Extension.*

So rapid has been the progress of the North of Ireland Shipbuilding Company's Foyle Shipyard in Derry that the company have acquired another four acres of ground for the purpose of extending their works. When the company commenced shipbuilding in Derry, some four years ago, they took over about seven acres. They subsequently leased from the Derry Port and Harbour Commissioners another twelve acres, and now they are taking over a fresh tract of ground they have almost quadrupled the area of the yard in four years.

*Property Owners' Conference.*

At a conference of the National Federation of Property Owners and Ratepayers held recently at the Cannon Street Hotel, London, E.C., Mr. E. Evans, who was elected president, said that one of the most serious of the war problems would be that of housing. It was impossible to say what, if any, State assistance for the purpose of housing might become necessary, but he solemnly affirmed that to make either the State or municipalities the landlords of the working classes would be a national disaster. A resolution was passed asking the Government to remove the regulations in Part I. of the Finance Act, 1909-10, and encourage and support private enterprise and co-operative efforts in the provision of healthy dwellings for the people.

*The Great Explosion.*

At the conclusion, last Thursday, of the inquests on victims of the great explosion in East London, Sir Edward Keith Price, Deputy Director-General of Explosives, said he was authoritatively informed that there was nothing to support the conclusion that the explosion was due to anything but accident. As to why an explosive factory was situated in such a populous district, Sir Edward said: "I need hardly say that in peace times it is the last place we would have dreamt of putting it. The answer is this. It was absolutely necessary to do it. It is no secret, I think, that at that time there was a very serious call for high explosives, and we were compelled to look about for a factory which would turn out the work required at the shortest notice. We went very carefully into it, and the only factory in the whole of the kingdom which offered the facilities we wanted, where we could get the necessary chemicals needed to carry out the work, was this one. Otherwise it would have meant going into the wilds and put-

ting up a new factory entirely. Here we had one which required some change, but not much, and we got it to work in record time."

*Predicted Great Demand for Timber.*

The first demand of the belligerents after the declaration of peace, according to Dr. Edward Ewing Pratt, chief of the Bureau of Foreign and Domestic Commerce in Washington, will be for wood. He estimates that the lumber camps of the United States will send over £200,000,000 worth, and that Canada, Russia, Sweden, Norway, Finland, and Austria will also contribute largely. The prospects for Canadian and American lumbermen are very promising. The rebuilding of Poland and Western Russia will absorb Russian energies for some time after the close of the war. Germany is using up her forest reserves, while Norway has long been over-cutting her annual growth. The greatest European competition will therefore come from the mills of Sweden and Finland. These countries are icebound during six months of the year, usually from October to May, so that the lumbermen of America will readily see the possibilities and responsibilities that lie before them.

*Science Buildings as a War Memorial.*

A meeting of the General Committee for North Wales and the Welsh communities of London, presided over by Lord Kenyon, at Rhyl, decided to make the erection of new science buildings at the University College of North Wales, Bangor, the North Wales memorial to men fallen in the War. The nucleus of the fund is a gift of £20,000 from Mr. Thomas, Garreglwyd, Holyhead, supplemented by another of £5,000 from Colonel David Davies. The Bishop of St. Asaph questioned whether the buildings could be said to be a memorial in the national sense when the people had not been consulted, and urged postponement of the decision as to the form of the memorial, but the meeting carried the scheme as outlined. It was urged that the Government and General Owen Thomas's scheme would provide for dependents and maimed men, and that by the development of science the whole country and future generations would benefit. Lord Kenyon was appointed chairman, and it was stated that the King and the Prime Minister approved of the proposal. The scheme will cost £150,000.

## OBITUARY.

*Mr. Charles Trubshaw.*

Mr. Charles Trubshaw, who has died at Derby, aged seventy-six, was for many years chief architect to the Midland Railway Company, and designed the Midland Hotel at Manchester.

*Lieut. Noel H. Statham.*

We greatly regret to learn that Lieut. Noel H. Statham, of the East Surrey Regt., was killed on February 3. Lieut. Statham, who was twenty-four years old, was the third son of Mr. H. Heathcote Statham, F.R.I.B.A., sometime consulting editor of this journal.

*Mr. H. G. Badenoch, F.R.I.B.A.*

Mr. H. G. Badenoch, architect, who has died after a short illness, was a native of Aberdeen, and had been in practice in Newcastle for twenty-five years, carrying on business in Emerson Chambers. He specialised in church architecture, and was responsible for the Presbyterian churches



in College Road, Arthur's Hill, Benwell, Byker, and Brighton Avenue, Gateshead. He was also the architect for the Cordwainers' Buildings, Newcastle. He was a member of the Council of the Northern Architectural Association. Mr. Badenoch's three sons are serving with the Forces. The eldest, an architect, who served his articles with his father, joined up in Toronto with the Canadian Contingent; the second son is also in the Canadian Contingent R.F.A., and the third son, a doctor, has been in France as captain in the R.A.M.C.

#### *Mr. A. R. Lowther.*

The death has occurred at Bagshot, Surrey, of Mr. Arthur Randall Lowther, who was a member of the firm of Messrs. Smith, Brodrick, and Lowther, which subsequently became Messrs. Brodrick, Lowther, and Walker, architects, and was very well known in Hull through his connection, as architect, with many of the Catholic churches and institutions, notably St. Mary's, Wilton Street; St. Patrick's, Spring Street; St. Wilfrid's, The Boulevard; St. Vincent's Boys' Home, Queen's Road; and the French Convent, Park Grove. Many examples of his work are also to be seen in the East Riding, at Beverley, Bridlington, and elsewhere.

## WAGES MOVEMENTS.

### *Wages in Leeds.*

An agreement has been come to between the Leeds Federation of Building Trade Employers and the five societies representing the joiners, masons, bricklayers, and builders' labourers in the city, on the demand for an increase of wages in view of the high cost of living. An application had been made to the employers for an advance of 2d. per hour, the present rate being 10½d. The employers offered an advance of a penny per hour, and this has been accepted, the new rate to come into operation forthwith. There have been several increases of wages since the outbreak of war, and the employers and employees specifically reserve the right to make further application for a revision should the circumstances justify it.

### *Cornwall Masons' Wages.*

The two years' notice which the Quarrymen and Operative Stonemasons' Society in Cornwall gave of their intention to revise their rules and to change their rate of wages from piecework to day rates expires on March 1. This is probably the longest period of notice ever given by any organisation affiliated to the trade union movement, says the Central News. The reason for the two years' notice lies in the fact that contracts for Cornish granite extend over a period of years, and any modification of trade practices could only be made concurrently with the expiration of these contracts.

### *Increased War Bonus at Loughborough.*

Alderman T. Smith, Board of Trade Arbitrator, has issued his award on the Loughborough builders' labourers' application for an increased war bonus. The difference arose between the Loughborough branch of the National Association of Builders' Labourers and the Loughborough Building Trades Association, in reference to a claim of the labourers for an increase of 2d. per hour on the current rate of wage per hour, inclusive of war bonus to meet the extra cost of living consequent on the War. Alderman Smith heard the parties at the Loughborough

Town Hall on January 25. Taking into account the fact that the standard rate of wage for builders' labourers was raised from 5½d. to 6d. per hour in June, 1915, and a war bonus of 1d. per hour was granted in April, 1916, making the current rate 7d. per hour, he now awards a further increase of war bonus of ½d. per hour, making the total rate 7½d. per hour (inclusive of war bonus). The increase was to be paid on the hours worked during the week ending February 3, and will continue to be paid during the present War, unless the award shall be altered or terminated by mutual consent, or after due notice, by either side, according to working rules.

### *Torquay Building Dispute.*

The award of Mr. Walter Addington Willis, of the Chief Industrial Commissioner's Department of the Board of Trade, the arbitrator in connection with the dispute between Torquay Master Builders' Association and their workmen as to a war bonus, has been received. About Midsummer, 1914, practically upon the conclusion of the then strike, the wage question was settled by an arrangement which precluded the application for a further advance earlier than May of this year. The workmen, however, recently claimed that, owing to the increased cost of living, the standard rate of wages was inadequate, and asked for a war bonus of 6s. a week, which later was modified to 4s. 6d. The employers offered 3s. To settle the difference an arbitration was held. Mr. Willis awards to workers in all branches of the building trade a war bonus of 9d. per day, provided the workmen work at least four hours a day. Where the time actually worked is less than four hours the bonus is to be 6d. per day. The award is retrospective as from December 1. Simultaneously with the application for the war bonus, a notification was conveyed to the Master Builders' Association that on May 1 next a further increase on current wages would be sought of 2d. per hour to all workers, and it is understood that, with the conceding of this latter demand, the war bonus will cease.

### *East Kerrier R.D.C.*

East Kerrier Rural District Council decided to give the surveyor a war bonus of £10 and to increase the roadmen's wages by 3s. per week during the war.

### *Truro Demands.*

A meeting of the employees in the building trade in Truro resolved to send a deputation to meet the employers with the following resolution: "That this meeting views with alarm the increase in the price of the necessities of life, and the common want of more wages to meet the demand, and they respectfully ask the several employers to consider an advance of wages to 8d. per hour for carpenters, painters, and masons and 7d. per hour for labourers."

### *Wages and Hours at Stourbridge.*

Stourbridge and District Building Trades Conciliation Board has had before it the demands of the carpenters and joiners, bricklayers, and labourers for an increase of 2d. per hour and a reduction in the number of working hours. It was resolved that on and from April 1 an increase of 1d. per hour, in the nature of a War bonus, be given for the duration of the War and for three months after, and that the question of working hours be deferred until after the War. The district affected by this decision comprises Stourbridge, Lye, Cradley Heath, Cradley, Halesowen, Old Hill, Brierley Hill, Quarry Bank, Belbroughton, Clent, and Kinver.

## A NOTABLE EXHIBITION OF FURNITURE.

The War having temporarily claimed the London residences of the Duke of Buccleuch, the Duke of Devonshire, and the Duke of Westminster, the valuable collections of furniture which they contain have been deposited by their owners on loan in the Victoria and Albert Museum, and the public is thereby indebted to them for a highly important and interesting exhibition.

The principal collection is that lent by the Duke of Buccleuch from Montagu House. It consists, for the most part, of French furniture belonging to the period of Louis XIV. to XVI., and includes remarkable series of Boulle examples, pieces signed by Carlin and Joseph, chairs and screens covered with Beauvais and Gobelin tapestry, and many other valuable specimens.

The collection lent by the Duke of Devonshire from Devonshire House consists almost entirely of furniture designed by William Kent, the architect of the house when it was rebuilt in 1734, after fire in the preceding year. It includes about twenty typical examples of Kent work, and thus will afford to students a unique opportunity of studying the characteristic style of this important artist.

Among the pieces lent by the Duke of Westminster from Grosvenor House, the most striking are a pair of Boulle armchairs similar to the well-known examples in the Wallace Collection and at Windsor Castle.

The exhibition has been arranged in the Loan Court on the ground floor of the Museum. Architects will no doubt find it an opportunity of inspecting ducal furnishings.

## THE STEPNEY MUNICIPAL BUILDINGS COMPETITION.

At a recent meeting of the Stepney Borough Council the Special (Office Accommodation) Committee presented the following report: "Under the conditions of competition for designs in connection with the erection of the proposed municipal buildings, the authors of the design placed first were to be appointed architects to the buildings, and if (except as provided in the conditions) a building contract was not signed within twelve months of the award, the architects were to receive a payment of £300 on account, and if the scheme was abandoned, or indefinitely postponed, they were to receive a further payment of £300 in full discharge, the drawings to become the property of the Council. We have had under consideration a reference from the Finance and Parliamentary Committee, embodying a communication from Messrs. Briggs, Wolstenholme and Thornely, the firm whose design was placed first in the competition, making certain suggestions with regard to proceeding with the working drawings in connection with the buildings. Having carefully considered the terms of the reference, we are of opinion that it would be advantageous to the Council if the adopted the proposals of Messrs. Briggs, Wolstenholme and Thornely, as the firm themselves would be able to devote even attention to the preparation of the designs at the present time, and the Council would at the termination of the War, be in a position to proceed with the erection of the buildings without delay, should they so desire." This was agreed to by the Council.





## WAR BUILDINGS SECTION

### WAR EMERGENCY HOSPITALS. II.—QUEEN'S CANADIAN HOSPITAL, SHORNCLIFFE.

NOTEWORTHY for the excellence of its arrangements and the pleasant character of its exterior and interior is the hospital at Beachborough Park, Shorncliffe, Kent, known as "The Queen's Canadian Military Hospital," of which Mr. Henry White, F.R.I.B.A., of London, is the architect. We reproduce in this issue several photographs of the hospital,

together with plans, sections, and details of the construction, kindly furnished by Mr. White.

The hospital was erected shortly after the outbreak of War, through the generosity of Sir Arthur (since deceased) and Lady Markham, who patriotically offered the loan of their country house and grounds for the purpose. The man-

sion, suitably adapted, was soon full of patients, and it was found desirable therefore to increase the accommodation; a temporary building for 102 additional beds was accordingly erected on the lawn and connected to the mansion in the manner shown by the plan on the next page.

Beachborough Park is a fine estate, situated about four miles from Shorncliffe,

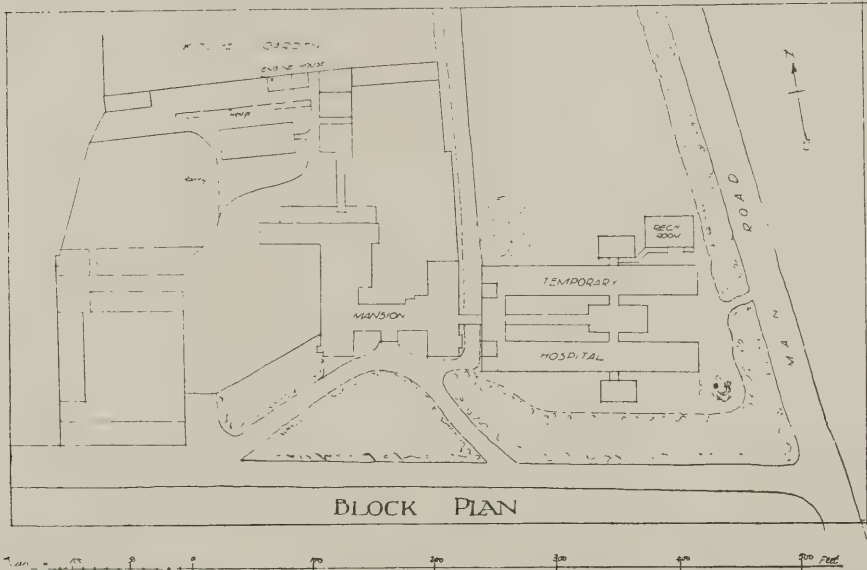


Photo: Lambert Weston, Ltd.





THE OLD MANSION.



on the road to Canterbury. The grounds, gardens and lawns are delightful. The situation is, indeed, an ideal one for the purpose of a temporary hospital and convalescent home, and the hospitality of the owners of the estate has proved most beneficial to the patients accommodated.

Advantage was taken of the slope of the lawn to keep the buildings well above the surface of the ground, thus providing ample circulation of air under the whole of the buildings. (See drawing reproduced on plate.)

As regards the planning, it may be pointed out that the space at the disposal of the architect was limited, and as the main building was, in addition to providing accommodation for officers, etc., the administrative block for the whole hospital, the problem resolved itself into providing wards, diet kitchen, nurses' room, sanitary wings, etc., in such a manner as to entail the least amount of labour in carrying on the work and supervision of the hospital. Instead, therefore, of adopting the long narrow wards of the War Office hut hospital pattern, which forms the basis of most of the temporary hospitals that have been built, the architect adopted wide wards of moderate length and so arranged his plan that the diet kitchen is central to the four wards, while the sanitary wings, properly disconnected, are central to their respective wards.

Two wards accommodate twenty-six patients each and two twenty-four patients each, and there are two single-bed wards.

The wards are 24 ft. wide, 12 ft. 3 in. high to the ceiling, and 10 ft. to the wall plate. The "walls" are constructed of timber framing covered with asbestos sheeting inside and out, and the roofs are covered with Welsh slates—these having been offered at a less price than asbestos sheeting, owing to shortened demand in consequence of the War.

The flooring is of two thicknesses and laid to break joint, thus keeping out all ground air, and for warmth and easy cleansing the whole of the floors are covered with linoleum, which is turned up next the walls over a splayed fillet, thus avoiding sharp angles and serving to keep the heads of the beds away from the "walls."

Heating is effected by two double-fronted anthracite stoves in each ward, and the lighting and ventilating arrangements have received careful and detailed attention.

The photograph of one of the wards which we reproduce shows that although only a "temporary" hospital, there is none of the barn-like appearance usually associated with such buildings, but rather, as we have already mentioned, a bright and cheerful appearance.

When large numbers of wounded men have to be provided for at short notice makeshift arrangements are at times unavoidable, but where it is possible to provide large, bright, and airy rooms the patients are far more likely to recover quickly, and these conditions can no doubt be more easily attained in small than in large hospitals.

As many of the wounded are not "bed cases" there is great need to make provision for amusement on dull and wet days outside the ward. This was soon found to be the case at Beachborough Park, and although the hall of the mansion formed an admirable lounge for the men whilst the number was small, the case was quite different when the additional patients had to be catered for. A recreation room, therefore, was built. From the plan it will be seen that this can be approached from the central corridor without going

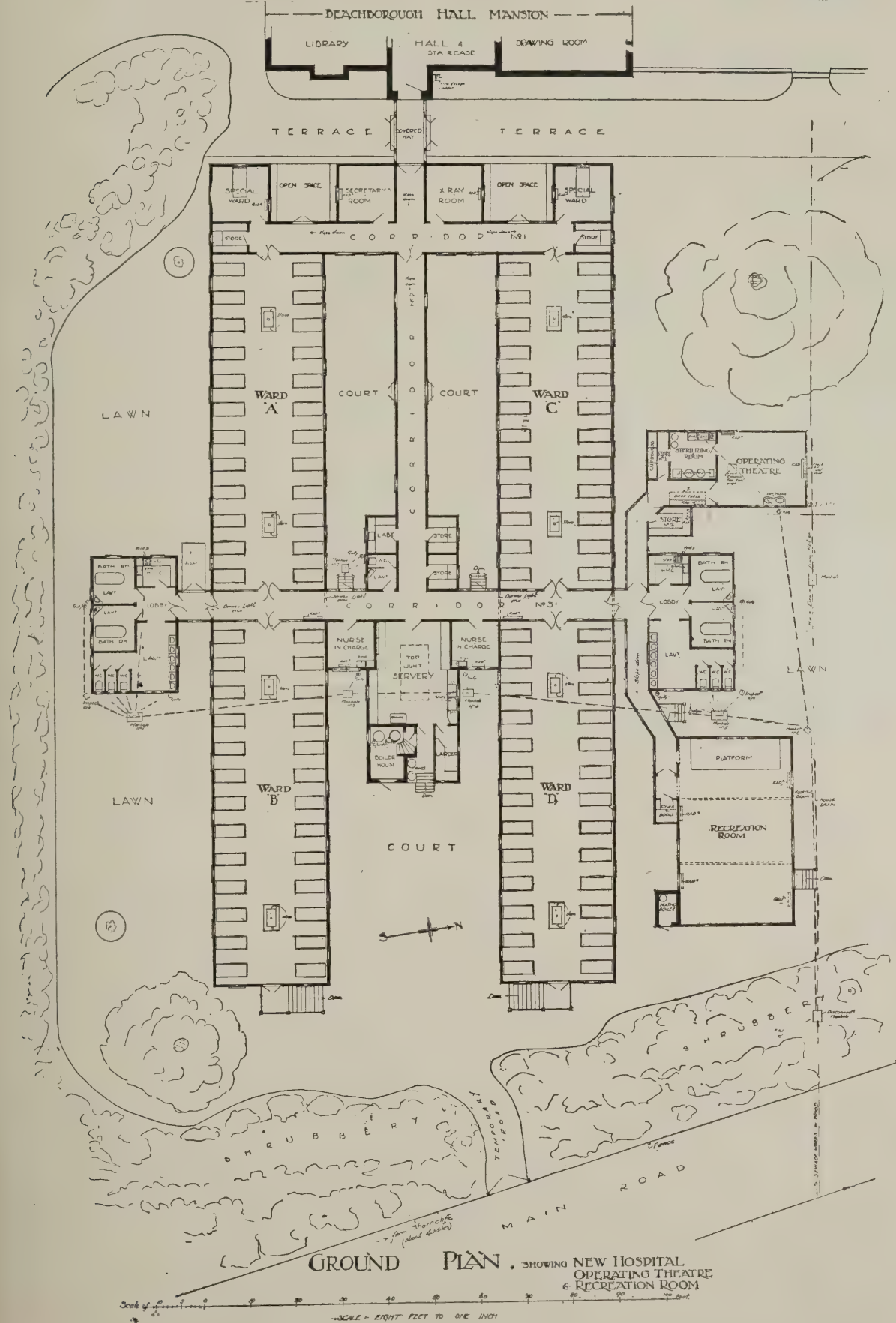


THE OPERATING THEATRE.



THE QUEEN'S CANADIAN MILITARY HOSPITAL,  
DEACHBOROUGH PARK, SHORNCLIFFE, KENT

NO. 42  
TWO BY EIGHT  
BY A. H. WHITE, F.R.I.B.A.  
M. C. S. E. 1917



W. HENRY WHITE, F.R.I.B.A., ARCHITECT.

into the open. The room is 40 ft. by 24 ft. and 12 ft. high, and has a movable platform for entertainments at one end. It is heated by hot-water radiators.

After a little time it was found that the operating theatre which had been fitted up in one of the rooms in the mansion was not convenient for the new wards. A special operating theatre block was therefore designed and built in the position shown on the plan, and it has proved very satisfactory.

The temporary buildings were erected by the Canadian War Contingent Association, the cost having been met by voluntary subscriptions from Canada.

The general contractors were Messrs. T. H. Kinglerlee and Sons, of Oxford. The

heating, hot-water supplies, sanitation, and electric lighting work was carried out by Messrs. Beaven and Sons, of Victoria Street, S.W.; the electric lighting installation involved putting in a 10-h.p. generating plant complete, to serve both the mansion and the temporary hospital.

### THE BUILDING INDUSTRY AFTER THE WAR.

In the Year Book for 1917 issued by the Welsh Housing and Development Association from 18, Queen Street, Cardiff, price 1s., is an article on "The Building Industry after the War," by Mr. William Williams,

president of the South Wales Building Trades Federation, who says:—

"The War has hit the building trade very badly. . . . In August, 1914, according to a Government return, the number of persons employed in building was 840,000, and these were employed principally on private building work. Over 300,000 of the men have temporarily left the industry, the majority of them having joined the Army, while a considerable number are employed in munitions and other war industries. Of the half-million or so men still engaged in building, more than 75 per cent. are employed in War work, such as aerodromes, arsenals, canteens, hospitals, and the like. The number of men still engaged in private work is now probably only about 100,000, and this number is diminishing day by day.

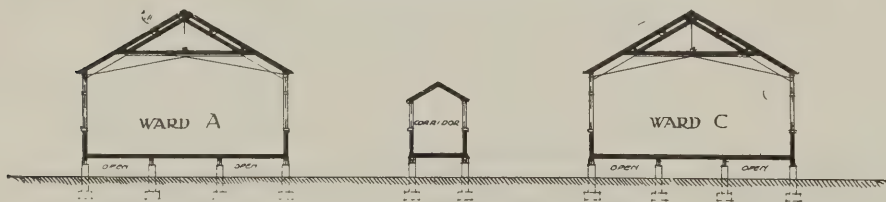
"When peace is restored and the demobilisation of the men now engaged in military or other War services takes place the labour market will be congested, and unless steps are taken to prepare building and other schemes beforehand considerable unemployment must ensue, accompanied probably by serious labour trouble. It is impossible yet to predict with any degree of certainty whether the end of the War will be followed by a boom or a slump in trade. In any case, during the transition period before the full resumption of peace activities there is a danger of considerable unemployment manifesting itself in various trades. Immediate action to prevent this is necessary, and I strongly urge that the nation is in duty bound to provide work for our gallant soldiers on schemes of national importance such as building.

"In the building industry six or seven hundred thousand men will probably be available for employment soon after the restoration of peace. On the other hand, dwellings for a similar number of families are urgently required. What more sensible method of avoiding unemployment could be provided than by engaging the unemployed building trade workers in the erection of dwellings to supply this need? How is this end to be attained? By the nation providing finance for local authorities, co-operative housing societies, and other approved agencies, such finance to be regarded as a necessary part of war expenditure. The preparation by local authorities and others of large housing schemes to be proceeded with immediately after the War is a matter of urgent importance, for unless such schemes are ready and the work is undertaken immediately demobilisation commences, the labour disturbances that must arise will be a serious menace to the national well-being."



One of the Wards.

Photo: Lambert Weston, Ltd.



CROSS SECTION THRO' WARDS A & C



CROSS SECTION THRO' WARDS B & D

Scale of 1" = 10' 0"      Scale Eight Feet to One Inch



## WASHING FACILITIES IN FACTORIES.

AMONG the Memorandums issued by the Health of Munition Workers Committee appointed by the Ministry of Munitions is one on washing facilities and from which we take the following facts:—

Experience has shown that when opportunities for washing are provided, they are rarely used; there may be a short period of inertia at first, but workers have not only an innate desire to be otherwise than clean, but soon bring influence to bear upon any of their fellows who do not avail themselves of the facilities offered. Evidence laid before the Committee, and reports received from investigators, have clearly established the desire of many operatives, especially those engaged in heavy engineering processes, for improved lavatory and washing accommodation.

### Lavatories.

Where washing accommodation has been provided inspection has shown that sufficient attention is seldom paid to details of construction. Frequently the details seem to have been left to a building contractor with no special knowledge of the hard usage to which fittings are subjected under conditions of industrial life; as a result lavatories, though adequate when new, may quickly fall into disrepair. Separate basins, originally provided with plugs attached by chains, are found with the chains broken, the plugs lost and the waste pipes stuffed up with rags. Walls against which basins are fixed, unless protected by an enamelled surface, soon become splashed with soap suds, and present an unhygienic aspect which cannot be easily or quickly improved. Waste pipes are often too narrow for convenient cleansing, or contain sharp bends and angles, and consequently become blocked or broken. Insufficient provision is often made for draining the lavatory floor, which possibly through bad construction becomes uneven and the site of pools of dirty water. The floor should be smooth, hard, impervious and properly sloped and graded. Nail

brushes and soap, even though frequently renewed, disappear, and thus involve a constant source of annoyance and expense. These troubles may be largely overcome by adhering to certain principles in construction.

The standard adopted under Factory Regulations is as follows:—The washing conveniences should be under cover and should consist either of—

(a) A trough with a smooth impervious surface (fitted with a waste pipe without plug), and of such length as to allow at least 2 ft. for every five persons, and having a constant supply of water from taps or jets above the trough at intervals of not more than 2 ft.; or

(b) At least one lavatory basin for every five persons, fitted with a waste pipe and plug, or placed in a trough having a waste pipe, and having either a constant supply of hot and cold water or warm water laid

on, or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on, and a supply of hot water always at hand when required for use by persons employed.

Where difficulties arise in regard to the use of ordinary lavatory basins they may in certain cases be overcome by using such a washing trough as that illustrated in Fig. 1. Here the necessary plumbing is reduced to a minimum; there is no plug; washing is done under a spray of water; the waste pipe opens directly over the drain; and the drain itself is flush with the floor, which is sloped towards it. The trough stands in the centre of the room, free from the walls, and the wall space can be used for cloak room accommodation, whether hooks or lockers. A useful modification of the water supply is to have only two spray taps for occasional use, and a series of flush holes in both sides of the water pipe, the supply to which is controlled by a cock on the far side of the taps. This cock is turned on just before the operatives come to wash at the close of each spell of work. Arrangements can be made for controlling the temperature of the water. Where space is limited, say, near the exit of a big engineering shop, a more compact installation may be used. This may take the form of a large circular basin with spray taps radiating from a central supply pipe coming down from above, and with an open pipe in the centre for carrying off the waste water to a drain in the floor, as shown in Fig. 1. Wherever spray taps are used, advantage is gained by so arranging the height and position of the taps that a douche bath for the head, neck and arms can be taken if desired.

### Baths.

In addition to ordinary washing accommodation, the provision of bathing facilities is desirable for workers in many industries, especially those exposed to great heat and excessive dust, and those brought in contact with poisonous material. Where men are employed under conditions of great heat, baths may prove an effective antidote to muscular rheumatism.

For men, the simplest and at the same time the cheapest and most efficacious installation is that of shower or douche baths (see Fig. 2). The stimulating effect on the

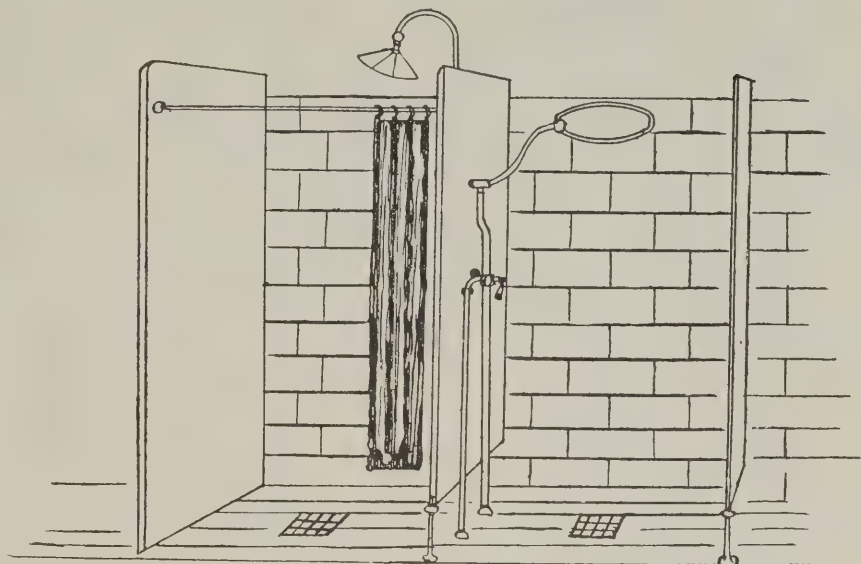


FIG. 2. SHOWER BATH CUBICLES.

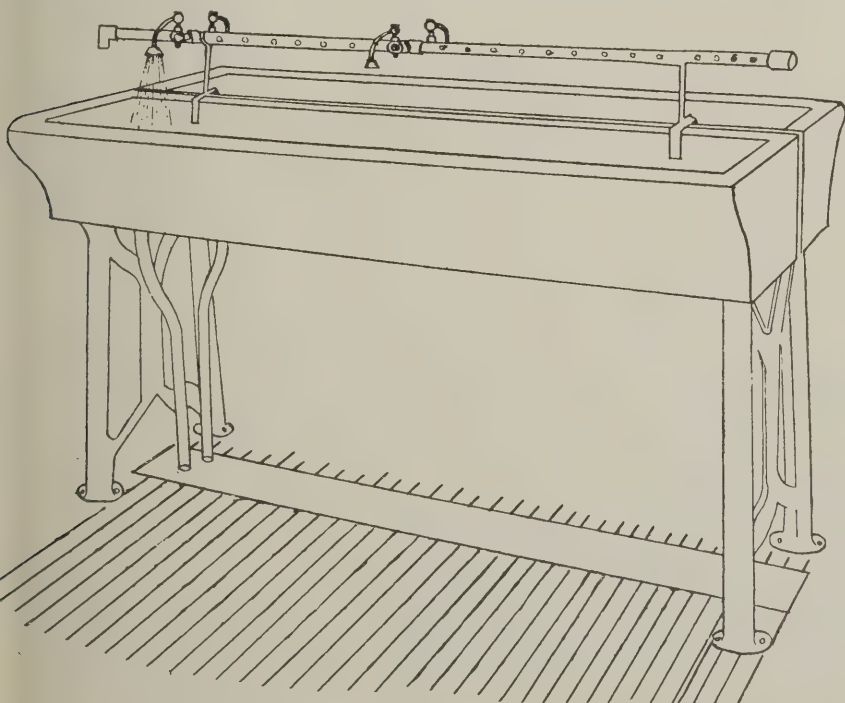


FIG. 1. DETACHED WASHING TROUGH.

skin of the falling water is greater than is obtained by total immersion. Douche baths have been strongly recommended for use by coal miners, and have been installed with success in many factories.

For women, ordinary shower baths are less applicable, because of the difficulty of keeping the hair dry or of drying it after bathing; a horizontal spray fixed at the level of the shoulders, or obtained from a movable nozzle or ring on a flexible tube, overcomes this objection.

The cubicles in which the baths are placed should be arranged to secure privacy. In order to reduce the time which each worker spends in the cubicle it may be possible to arrange for the workers to dress and undress partly outside the cubicle, but at any rate in the case of women some provision for dressing, including a seat and pegs, must be provided inside the cubicle. Where this is done the size of the cubicle should not be less than 3 ft. wide by 4 ft. deep. The walls should ordinarily not be less than 6 ft. high. A space should be left between the floor and the walls of the cubicles sufficient to permit of drainage and cleaning.

The building and fittings should be such as to facilitate the maintenance of absolute cleanliness. Square corners, ledges or rough inner surfaces should be avoided. Wood should be used only for seats, and for this purpose hard wood should be employed with spaces between the wood for ventilation. The walls and partitions (and this applies also to lavatories and sanitary conveniences) should always have smooth and curved surfaces which can be readily washed down and cannot be used for writing on. Enamel tiles and bricks, or enamelled metal sheets, may be used for this purpose; any initial cost thus incurred is soon recouped by saving in cleaning and lime-washing.

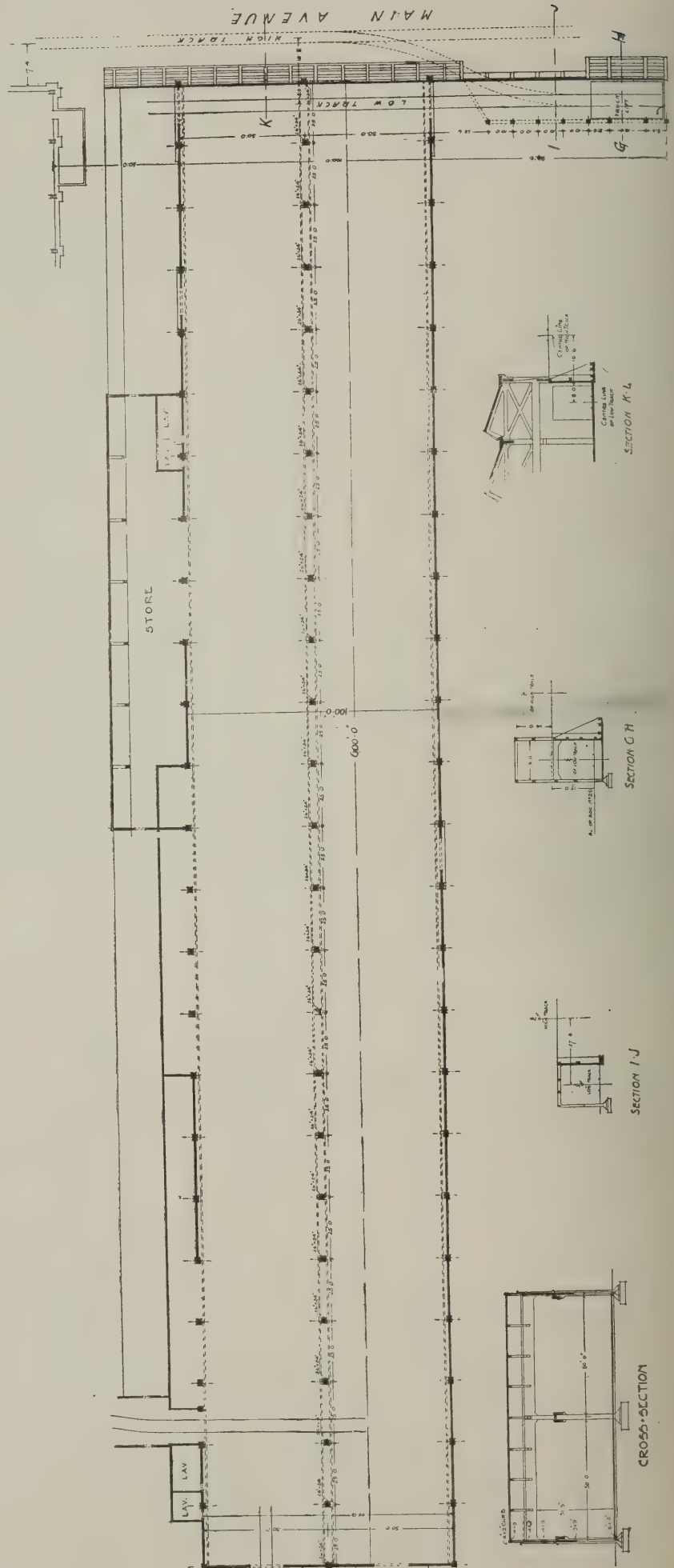
As regards the water supply, it will generally be found preferable for the temperature to be regulated by an attendant rather than the worker should regulate it himself. A temperature of about 100 deg. Fahr. is usual.

#### Drying of Clothes.

The conditions of employment which render the provision of baths specially important often also make it desirable that there should be facilities for the drying of clothes. If only cloak-room pegs or lockers are provided for the damp clothes, hot-water pipes should be placed immediately beneath them. A preferable plan where a large amount of clothing has to be dried is to suspend the clothes from the roof of the building by a chain or string securely fastened at the lower end. The heat of the building produced by the hot-water pipes for the baths causes a good ventilation in the roof which satisfactorily dries the clothes and prevents any disagreeable odour. The interior of the building may with advantage be maintained at a level temperature of about 70 deg. Fahr. This adds to the comfort of the workers and effectively dries the clothes. Ventilation can be obtained by the provision of ventilators in the roof or by the use of fans.

#### Supervision.

The maintenance of any installation provided is almost as important as its construction. This should be made the definite duty of an appointed officer acting under the Welfare Supervisor, who should keep the lavatory clean, control the supply of nail brushes and soap, and arrange that dry clean towels are available. Such an officer may also usefully be employed in attending to the sanitary conveniences, and in supervising the cloak-room.





HTB  
Arch

# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MARCH 7, 1917.

TOHILL STREET, WESTMINSTER.

VOLUME 45. No. 1157.

MOST important step has been taken by the London County Council with respect to the design and construction of their school buildings. On the recommendation of the Building Committee, the Education Committee have determined to adopt a cheaper type of school building, of which the cost will work out not the customary £15 15s. a head, but to 4s. 9d., "a net reduction of £4 10s. 3d. per head, equivalent to a reduction of £4,045 on a standard school of 896 places." There are to be thinner walls, these are to be built of Flettons, faced externally with stock and special bricks instead of red bricks. Ornamental brick cornices to elevations are to be omitted, and stone dressings to entrances are not to be provided. Other items of economy are specified in the recommendation, which we reproduce in full in our next part of the present issue. The proposed new type L.C.C. school at Greenwich is to form the revised standard for future elementary school buildings. For some years past a movement in favour of cheaper schools has been gathering force, and there is much to be said in its favour. With educational methods and ideals subject to frequent revisal, popular opinion fluctuating, and new methods and materials of building construction coming into use, the incongruity of building schools as if they were intended to last for ever and resist change became clearly evident. In this case, we think, was made out for a lighter and more permanent type of building, and we have always been sympathetic to a certain degree of sympathy with the cause for this reform.

\* \* \* \* \*  
Approval of a principle, however, does not involve anything as to the manner of giving it effect, and we have always been careful to protest against cheapening at the expense of amenity. Cheap building will cost us nothing if it implies poverty of architectural effect; and the apparent determination to eliminate simple decorative features from the elevations does not inspire much confidence that the Council has any very clear comprehension of the educational value of æsthetics. Of course, a building utterly destitute of ornamentation in its composition and proportions, possess all the virtues of simplicity, but deprivation of all means of embellishment is a dismal condition: for who shall impart expression to a featureless face? Against the Council we have to lodge the serious complaint that, having chosen what is surely the most inauspicious moment for initiating so drastic a change, they recklessly ordain that this war-time-economy type of school, which has yet to materialise, shall "form the revised standard for further building!" Common sense should have dictated the precaution of first ascertaining what the school looks like when actually completed, and how it answers its purpose. Possibly it may be in all respects quite excellent, as we devoutly trust it may be; but, whether or not the adventure turns out successfully, it is obvious that the Council, bent on economy at all hazards, is taking a rather desperate step in the dark. It is to be assumed, however, that the Council will not build in war-time, and that its successors in office may have an opportunity of overruling the austere policy of penuriousness which robs the school of the inoffensive customary cornice and the stately stone door-dressing.

M. Louis Jardin, the *architecte-expert* who contributes so many delightful leading articles to our Paris contemporary "Le Batiment," expresses considerable disappointment with the exhibition of architecture in the invaded provinces which has been organised by the Sous-Secrétariat d'Etat des Beaux-Arts and the Société des Architectes diplômés par le Gouvernement, "to the exclusion of all the other French societies." Perhaps the phrase within quotation marks is a key to the criticism. If the exhibition had been thrown open to all French architects, it would have been really architectural; as it is, M. Jardin can see in it hardly anything but pretty pictures—the works of painters, aquarellists, engravers; although, to be sure, some three or four *projets*, buried amidst this welter of the fine arts, served as a rather jarring reminder that the exhibition was professedly architectural. They disturbed the general harmony, interfering with one's enjoyment of the lovely landscapes in which the pretty effects of light and shadow athwart the rippling river were emphasised by the inclusion (obviously to give them value) of an unobtrusive building or so. M. Jardin admired these pictures immensely. They were beautiful, but they were not architecture, and M. Jardin thinks a great opportunity has been missed of promoting "the renaissance of our old French arts" by adapting them to modern conditions and requirements. He holds that the exhibition should have been national, democratic, practical, and he has our sympathies. He will no doubt have been delighted to learn that, as we announced last week, the Royal Academy, by admitting photographs, has converted what was virtually a mere picture-show into what must be henceforth much more of an exhibition of architecture pure and simple. It will be interesting to watch the effect of this English example on the future products of the Beaux-Arts schools, where, it would seem, if M. Jardin's criticism of this latest exhibition is not overdrawn, the splendid tradition of fine draughtsmanship seems to have become rather overwhelming; and one half-fears a reaction against it that would be even more disastrous. The good Greek axiom, "Nothing in excess," applies both ways, and failure to observe it in a revulsion from over-picturesqueness would be exceeding pitiful.

\* \* \* \* \*  
It will be noted, neither with the surprise nor with the alarm that would have been inevitable before the war, that a "draughtswoman" is advertising for employment. All the old prejudice against the invasion by women of domains which men, with a certain arbitrariness, had staked out as their own, has merged in admiration of the grit, courage, and ability with which women have addressed themselves to unaccustomed tasks, and it is not imaginable that from this new tolerance the draughtswoman can be excepted. What will happen when the men return from the war it would be folly to attempt to forecast in detail, but, on a broad view, it would seem almost certain that, what with the depletion in all departments of activity, the reluctance of many men to resume their former civil occupations, and the moral obligation to refrain from discharging women from employment in which they have shown efficiency as well as patriotism, one may confidently anticipate the prevalence of the new policy of the open door. Possibly the advent of



draughtswomen may help to solve a difficulty of old standing. On the one hand, principals have complained of having to pay their junior draughtsmen more than the work is worth; on the other hand, the junior draughtsmen have bitterly resented the meagre remuneration which is all that can be afforded for routine services. For various reasons women are, as a rule, prepared to accept a lower rate than men; and a sufficient supply of trained draughtswomen would at once relieve principals of a constant source of worry, and end the troubles of the underpaid draughtsman by gradually and painlessly eliminating him.

\* \* \* \*

We refer, of course, to the bond-slave of the T-square—to the routine draughtsman who is only that and nothing more, and (to speak quite frankly) who would have been well advised in his early youth to adopt work which he might have found more congenial and more lucrative if more laborious. Quite obviously the draughtsman of manifest talent is in different case, and need not fear any kind of competition; but it may be supposed that hitherto there has been done by muscular and uninspired young men (often innocent of architectural qualifications) much draughtsmen's work that would be more fittingly given to trained women, and it would seem that the opportunity for introducing this change without inflicting hardship on any single member of an ill-requited profession suggests itself as among the countless economic readjustments that will follow the war. That the operation should be painless is a point upon which we lay particular stress; and, for the reasons given above, we have but little reason to suppose that it will be otherwise. Architectural principals are the most considerate of employers. They will not discharge men to make room for women, nor will they employ women in preference to men as long as the supply of trained men continues to be adequate; but they will probably take thought whether, all things considered, it would not be advisable to accept for novitiate adaptable ladies, rather than continue to swell the ranks of men who would be more happy in more robustious occupations, and, in the rush of business after the war, will probably have no difficulty in finding them. We are not advocating this course, but merely estimating the possibilities suggested by the "draughtswoman" advertisement.

\* \* \* \*

An interesting point in art history is raised in the recently published fifth volume of the Inventory which is being compiled by the Royal Commission on Ancient Monuments in Wales and Monmouthshire. It is suggested—of course with due reserve—that the effigial tomb of Sir Rhys ap Thomas in the church of St. Peter, Carmarthen, possibly embodies the design submitted by Mazzoni for the Westminster Abbey tomb for which Torregiano's design was ultimately accepted by Henry VII., who, by the way, was fond of tracing his descent from Cadwallader, the last King of the Britons, and in token thereof Cadwallader's ensign of the red dragon is prominent on the Westminster tomb. Torregiano, whose name is often oddly Englished in the documents to "Peter Torrysany," pleasantly connects the Abbey with Lorenzo de Medici, the most munificent of all patrons of the arts, and, by consequence, with Michelangelo. Peter, who came to England about 1503, made the contract for the monument to Henry VII. in 1512. Sir Rhys ap Thomas was a liberal patron of the arts, and, in this quality, and as one of the great men of his day, he would probably have opportunities of seeing the design which the King had rejected, and which Mazzoni would be glad to bring to his notice. Clearly the Commissioners have started a "runnable stag," and Welsh antiquaries might be worse occupied than in following the hunt.

## THE PLATES.

### *Rostral Columns, Bordeaux.*

THESE columns stand at the river front of Bordeaux's chief square—the Place Quinconces, which occupies the site of the ancient Château Trompette. Designed by a local architect named Poitevin, they were erected in 1818 as beacons, there being lights at the top, to which access is gained by a spiral staircase within each column. A slight railing, carried on the abacus, gives protection to the man in charge when he has occasion to attend to the lights from the outside, or when the outlook is being kept. The columns are built of stone and have four rostra or ships' prows applied to the lower part of the shaft, above which are carved anchors and caduceuses. The summit in each instance is crowned by a figure, one representing Commerce, the other Navigation.

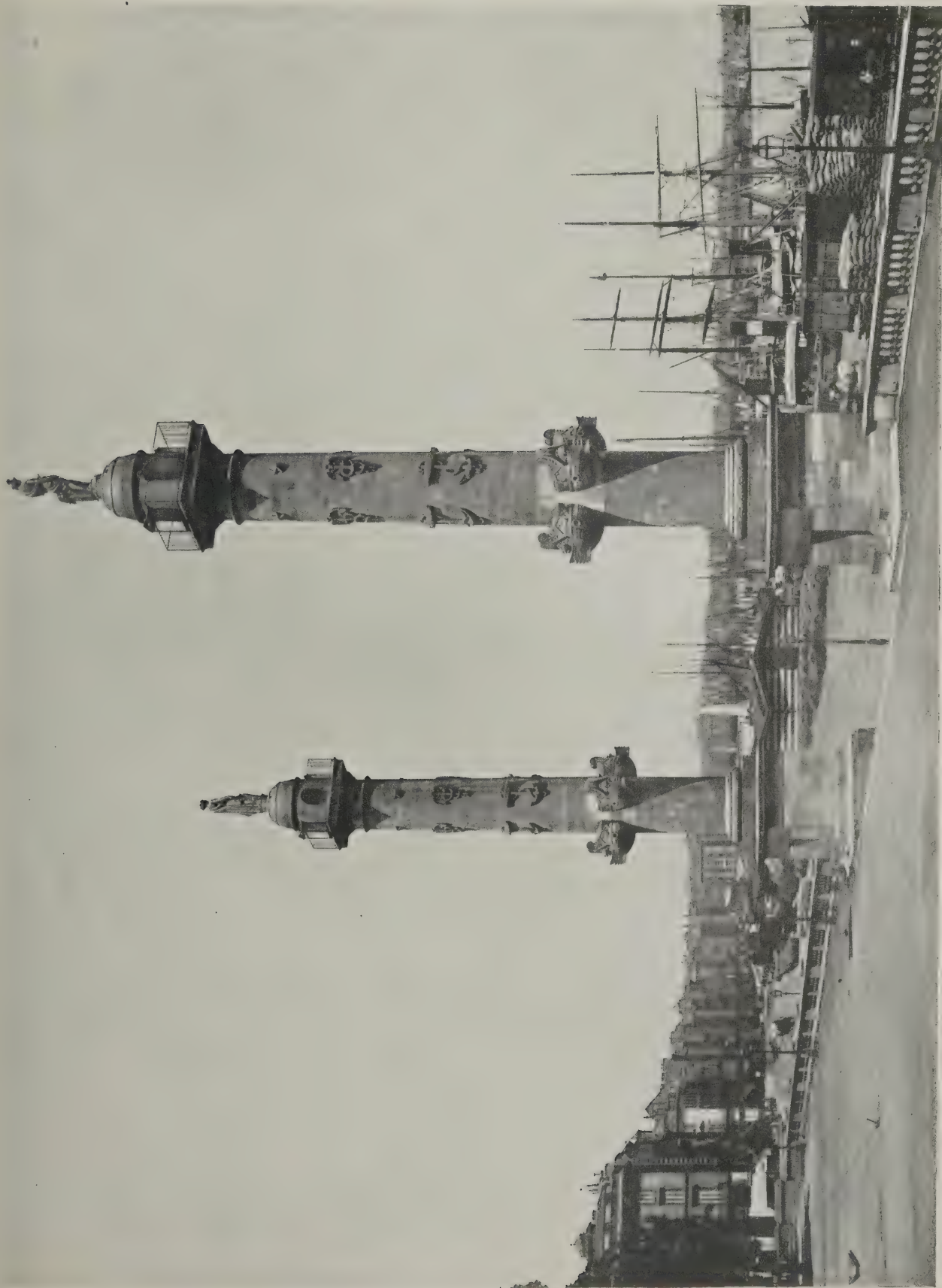
### *Chemistry Laboratories, University College.*

The new chemistry laboratories at University College, Gower Street, London, have been erected on a site immediately to the north of the main College buildings. The front to Gower Place is 315 ft. in length. The planning of the interior was settled by the architect, Professor F. M. Simpson, F.R.I.B.A., in consultation with members of the chemistry staff, who had beforehand made a tour of inspection of the chief modern laboratories at home and abroad. The laboratories at University College may therefore be regarded as embracing the most modern ideas in arrangement and equipment. There are numerous excellently contrived details, among them being the acid stand shown below. The apparatus, it will be noted, instead of being set casually on bench or shelf, are mounted together in three superposed ranges. Below the taps is a glazed fire channel, into which the drips fall. The channels are set at a slight incline, and a water supply is led to the end of each, with an outflow pipe at the opposite end.



ACID STAND IN NEW CHEMISTRY LABORATORIES,  
UNIVERSITY COLLEGE, LONDON.

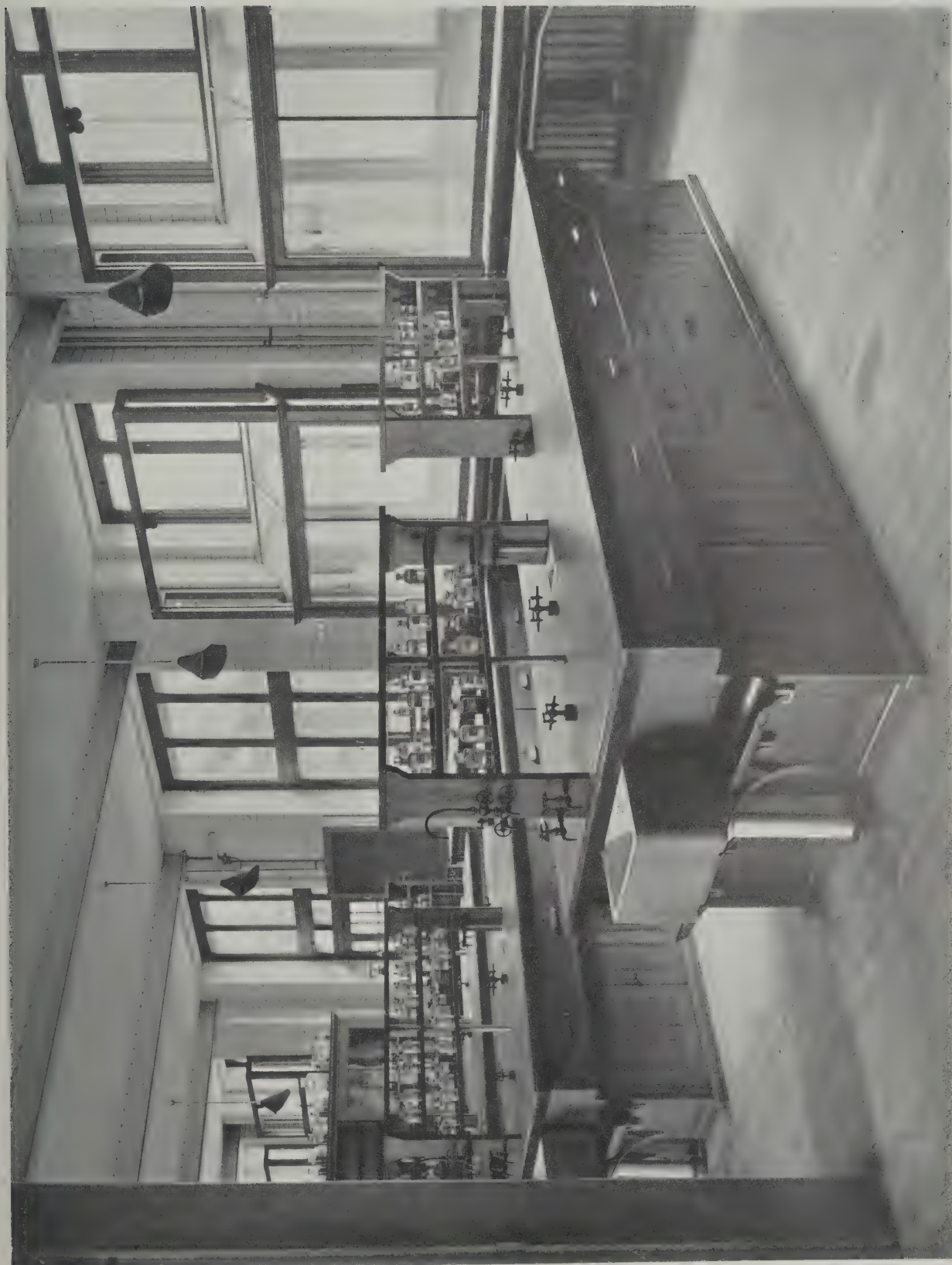




COMMEMORATIVE COLUMNS AND OBELISKS. V.—ROSTRAL COLUMNS, BORDEAUX.





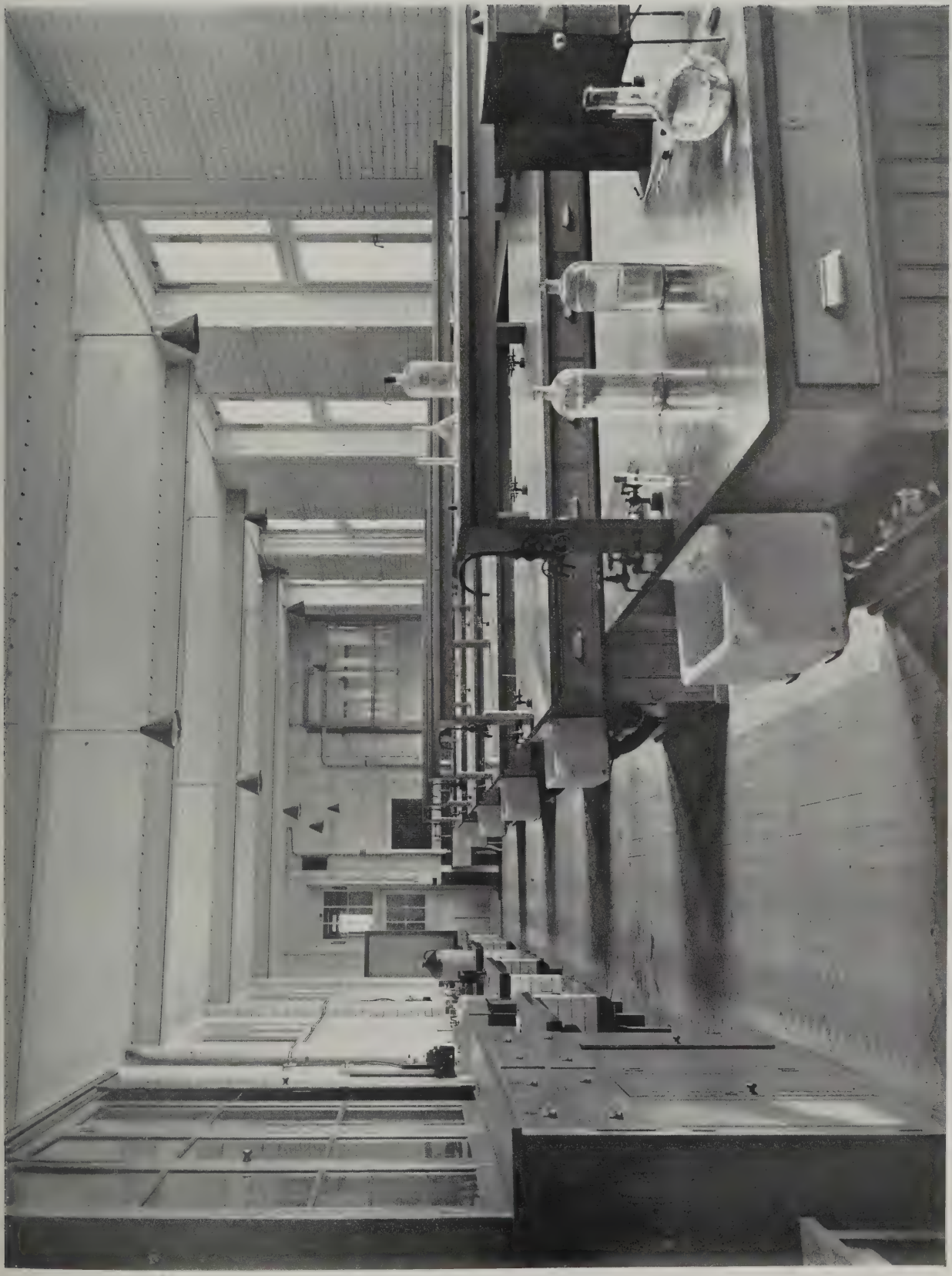


SCIENCE AND TECHNICAL BUILDINGS. XXII.—INORGANIC CHEMISTRY LABORATORY, UNIVERSITY COLLEGE, LONDON.

PROFESSOR F. M. SIMPSON, F.R.I.B.A., ARCHITECT.





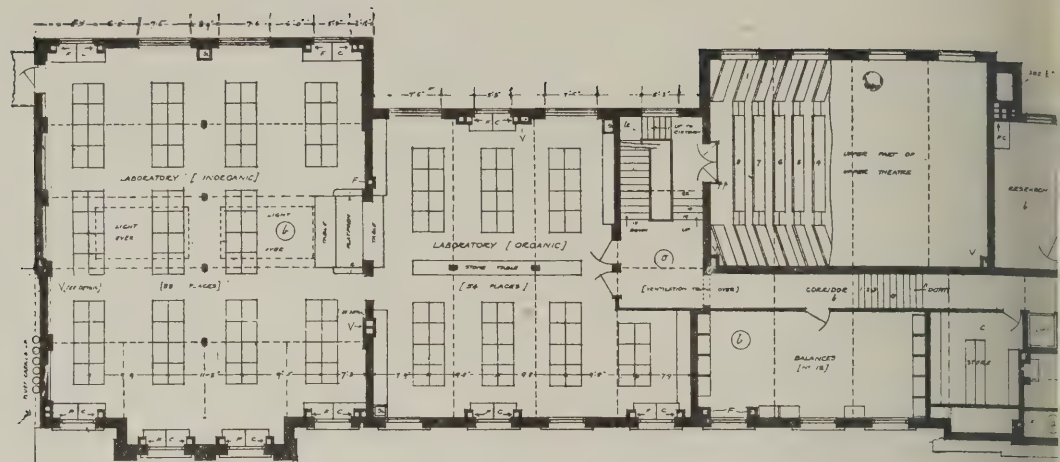


SCIENCE AND TECHNICAL BUILDINGS. XXIII. —PHYSICAL CHEMISTRY LABORATORY, UNIVERSITY COLLEGE, LONDON.  
PROFESSOR F. M. SIMPSON. F.R.I.B.A., ARCHITECT.

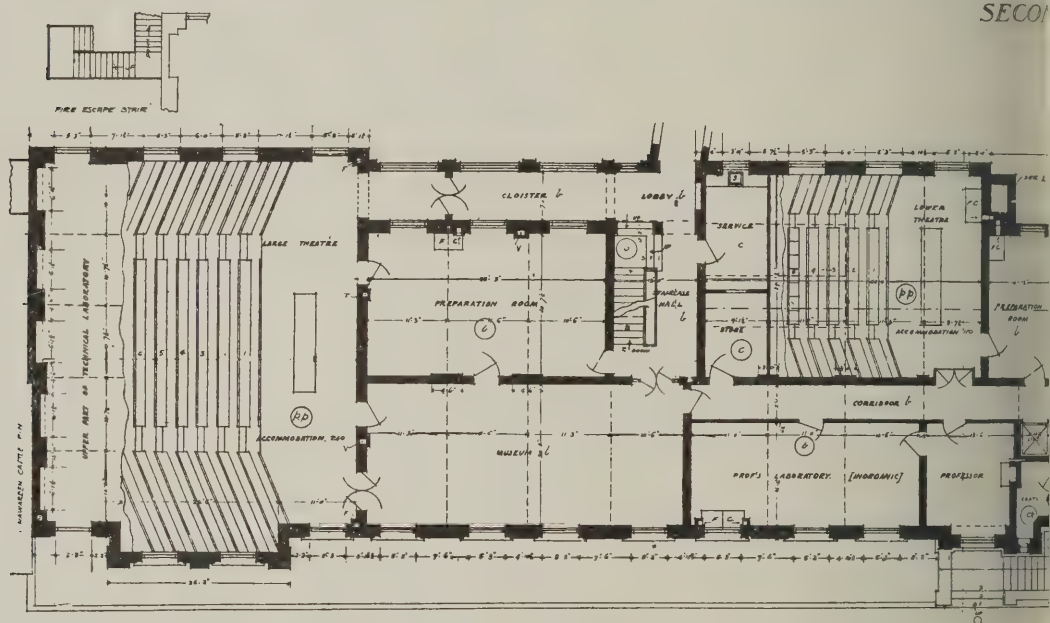




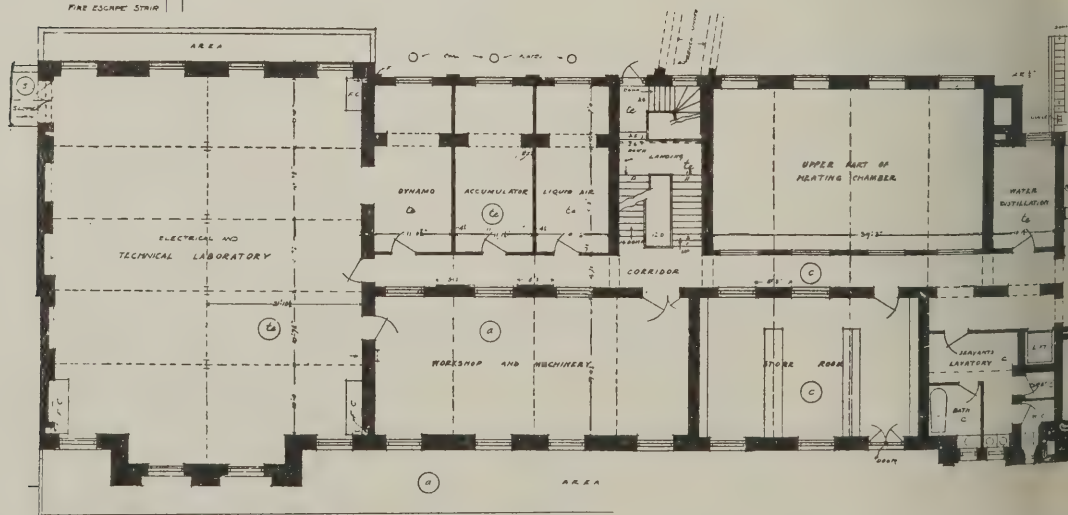




SECOND FLOOR

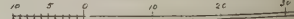


GROUND FLOOR

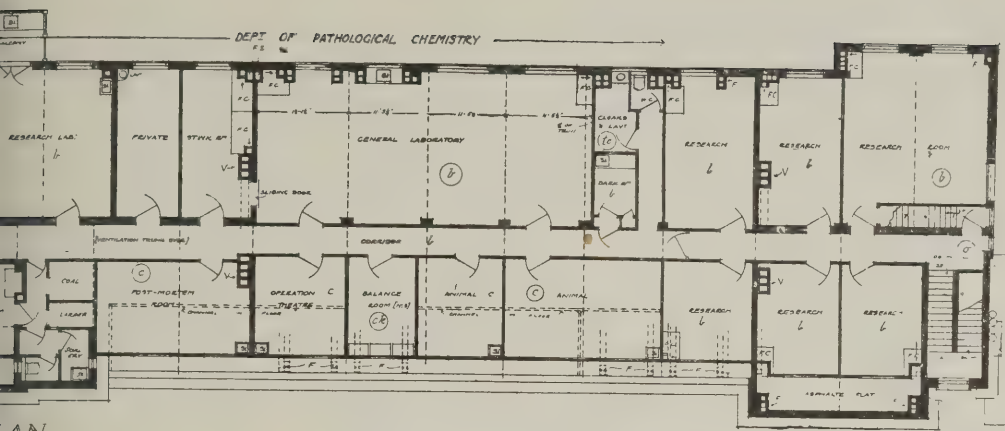


BASEMENT

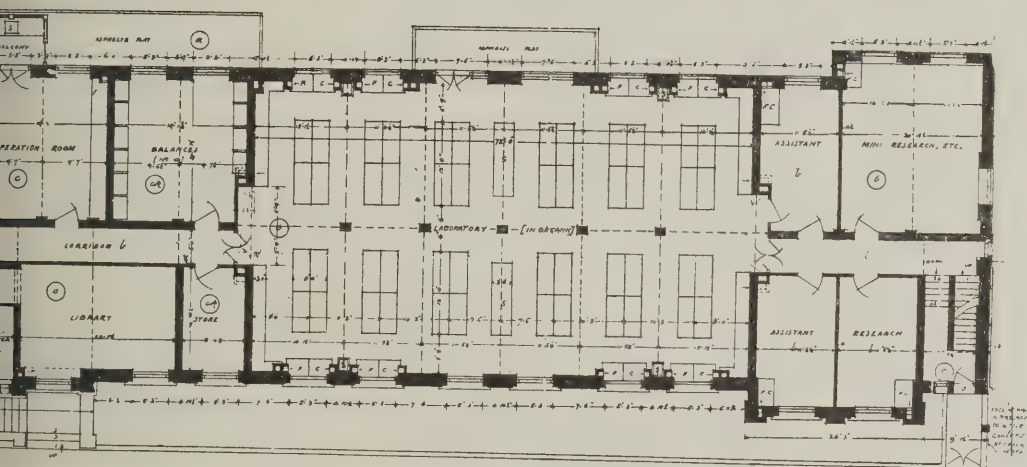
SCALE OF FEET.



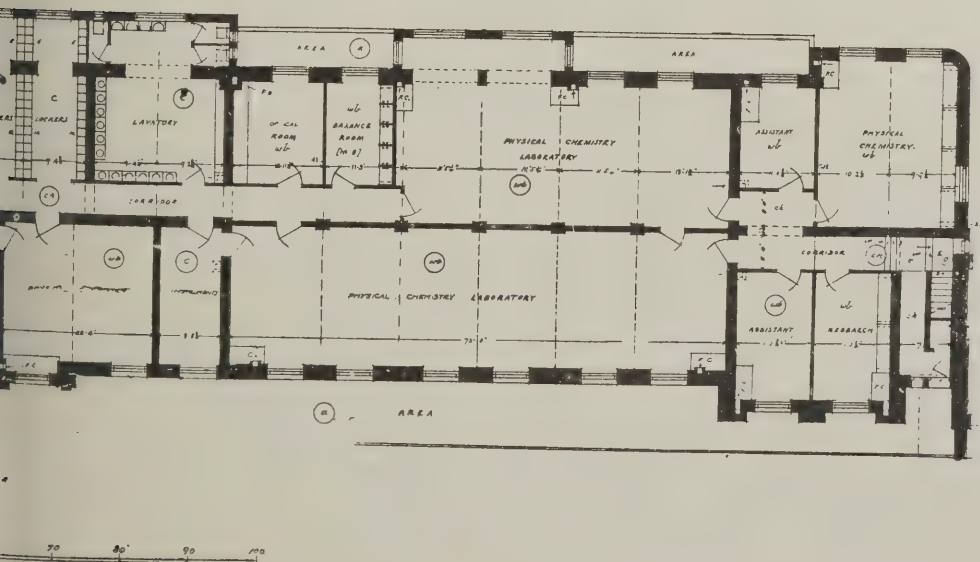




PLAN.



ANINE PLANS.

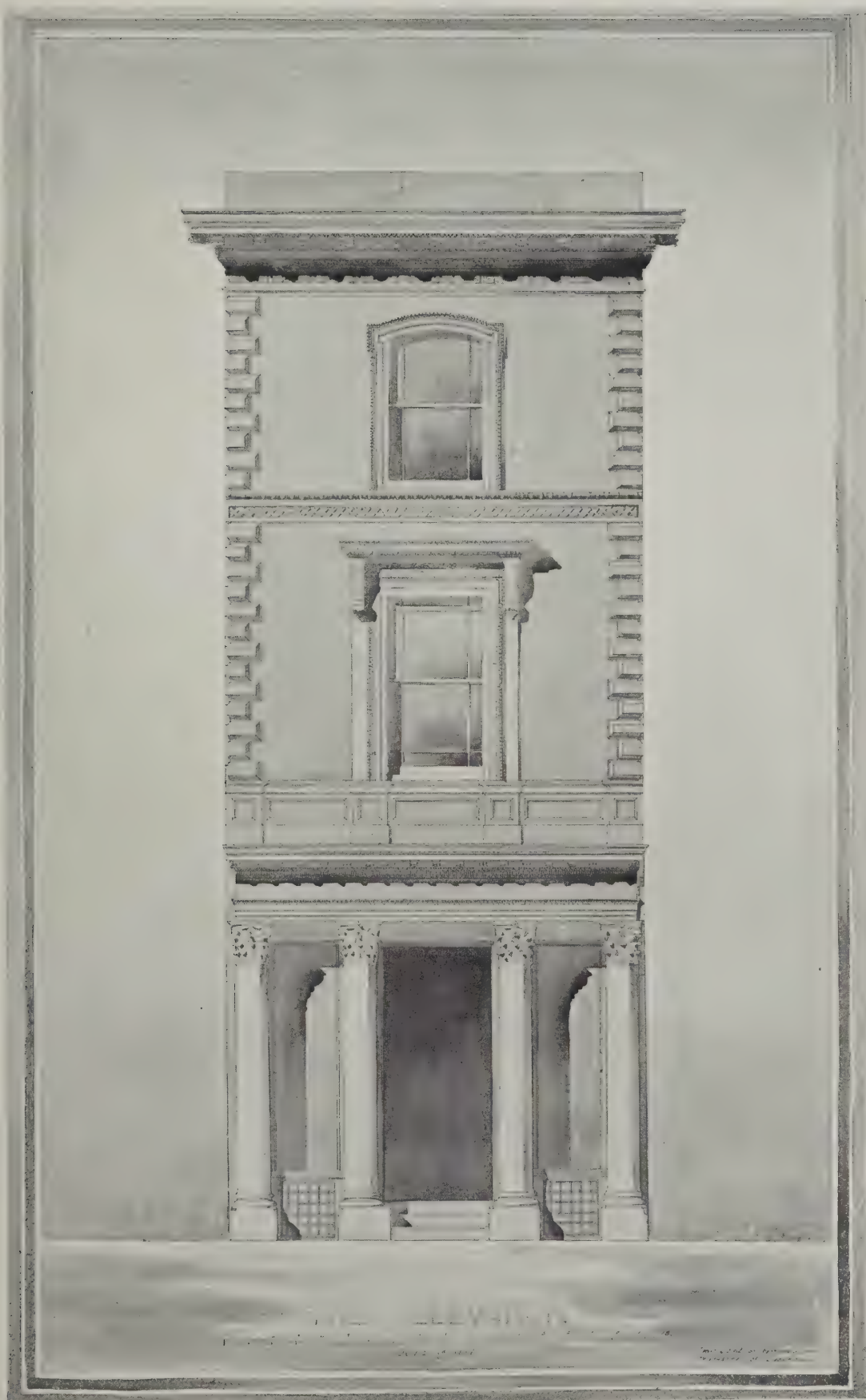


UNIVERSITY COLLEGE, GOWER STREET, LONDON, W.C.

A., ARCHITECT.







STUDENTS' DRAWINGS (SERIES II.). XLI.—FACADE OF ARMITAGE AND WOLFF'S PREMISES, MANCHESTER.  
MEASURED AND DRAWN BY GORDON HEMM.





The waste is thus carried away very effectively, and supplies of acid may be obtained by students with the greatest ease and without causing any troublesome mess. On the plates in this issue we show general views of two of the laboratories—one the inorganic chemistry laboratory on the ground floor, the other the physical chemistry laboratory in the basement. Other portions of the building will be illustrated in later issues. The building comprises a half-basement, ground, first, and second floors. In the half-basement, facing Gower Place, the lighting is excellent, the lower parts of the windows being fitted with prismatic glass. The western portion of this floor is occupied by the laboratories and research rooms for physical chemistry. At the eastern end is a room, about 50 ft. square, supplied with gas, water, steam, compressed air, and drainage, for the experimental electrical plant. Adjoining this room is a well-fitted workshop for the construction of apparatus for the departments of chemistry and physics and for the use of students. On the same floor are rooms for the production of liquid air and hydrogen for low-temperature research, and for the main chemical stores. The arrangement of the houses that previously stood on the site has been adapted for the storage of corrosive and inflammable chemicals. On the ground floor are two lecture theatres and preparation rooms, the library, the private room and laboratory of the Professor of Inorganic and Physical Chemistry (Dr. G. Donnan, who succeeded Sir William Ramsay in 1913), the main inorganic laboratory for secondary students, with rooms adjoining for operations involving noise or fumes, for balances, and a store for the chemicals needed on this floor. The laboratory and the balconies have special fan ventilation. The tops of the benches are of unglazed, highly compressed tiles, which are fire-proof; they are easily kept clean and do not increase the breakages, as was feared. Beyond this laboratory is a group of research rooms for the assistant members of the staff and for research students. On the first floor are the private room and laboratory of the Professor of Organic Chemistry (Dr. Norman Collie, who has occupied the Chair since 1902 and is Director of the laboratories), the organic laboratory, combustion room, and balance room, at one end, and a group of research rooms at the other, as well as the organic lecture theatre, the organic chemical stores, an apparatus store, a dark room, a spectroscopy room, a service room, and lavatories. On the second floor are the laboratory for first-year students (providing bench accommodation for one hundred to work at a time), the Department of Pathological Chemistry, and six rooms for general chemical research. The building has three staircases—the main one in the centre of the building, one at the extreme west end, connecting the research rooms, and the other at the end of the bridge, over Little Gower Place, which connects the new building to the old College buildings. The three lecture theatres and the first-year laboratory open on to the last staircase. By this means the larger portion of the traffic of the building and the attendant dust is kept to one staircase, and to the one farthest removed from the part of the building devoted to advanced work and research. There is no external fire-escape staircase, serving the block of the theatre and the large laboratory on the top floor at the east end. The general ventilation of the building is controlled by four separate fans, the air from each room running to a main duct in the roof. The laboratories and research rooms have glazed brick walls; they are amply supplied with open cupboards, which are ventilated by separate flues in which the draught is created by gas-flames. Around the walls of the research rooms are teak benches carrying gas, water, waste, and compressed air. The chief aim of any University, it may be

added, is to train students so that they may be of use to the State, and the new chemistry laboratories at University College will make it possible to do this. Not only is there every facility for teaching students up to the degree standard, but also post-graduate work and research will be possible to an extent beyond that in most laboratories, owing to the provision of a large number of private rooms and laboratories. This arrangement for post-graduate work and research is one of the chief and one of the most useful features in the new laboratories. Most of the research rooms are together in the block at the extreme west end of the building, with a separate private entrance from Gower Place, and are served by the western staircase, as already mentioned. The work of a University should be measured by the number of post-graduate students and the amount of research work produced. The record of University College as one of the chief pioneers in higher scientific education in this country is a proof of its power. It is in the forefront in scientific work. The College has a fine tradition—it can boast of a Graham, a Williamson, a Ramsay, and a long roll of distinguished students—and it may be trusted to make discoveries and to train students to take high positions in the world of science and of industry.

#### *A Manchester Façade.*

We have not been able to determine who was the architect of this building, but it is undoubtedly one of the best works carried out in Manchester during the classical revival period of the nineteenth century. The arrangement of its parts is excellent and its detail refined.

### CORRESPONDENCE.

*The Architectural Association Red Cross Detachment  
(London 43rd).*

*To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIRS,—With talk of National Service in the air, most of your readers are doubtless asking themselves how they can best use their energies to the national good. May I bring the claims of the Architectural Association Red Cross Detachment before these, as we are badly needing more members?

The value of the work which the detachment is doing cannot be overestimated. Those members we have are working very hard, but it will not be possible for them to cope with all the duties which the detachment is called upon to perform unless their numbers are increased. We appeal particularly to members of the architectural profession to join us, and I am certain that the only regret of those who respond will be that they did not come forward earlier and help in what is surely one of the finest branches of voluntary work that can be undertaken at the present time.

If there are any whose sympathies are with us, but who are prevented from becoming members by age or distance from town, they can give practical evidence of their sympathy by sending donations, either for the general funds of the detachment, which always need augmenting, or by subscribing towards the ambulance, which we are hoping to buy from funds raised by our members, for use in connection with the detachment work.

Communications should be sent to me at the address given below.

F. R. YERBURY,  
Quartermaster.

Architectural Association Red Cross Detachment  
(London 43rd) 37, Great Smith Street, Westminster,  
S.W.



## CHEAPER TYPE OF ELEMENTARY SCHOOL.

At last week's meeting of the Education Committee of the London County Council proposals for a cheaper type of school were considered, on the following report of the Buildings Sub-committee:

On July 28, 1915, we reported that, with a view to making economies in planning and construction of elementary schools, revised preliminary plans had been prepared for the erection of an elementary school in the Stowage, Greenwich, and that the scheme, whilst complying with the requirements of the Board of Education's building regulations (1914), could be carried out at considerably less cost than the scheme which had already been approved by the committee and the Board. The committee decided to submit the revised preliminary plans to the Board for approval. The Board replied as follows: "With reference to Mr. Allen's letter of 5th ultimo, I am directed to state that the Board notice that the revised plans have been so contrived that none of the classrooms open off the hall directly, but they do not get the advantage of the cross-ventilation which has been provided in the more recent schools erected by the London County Council. The Board, while regretting the loss of this feature, to which they attach importance, have no doubt that the Council on this occasion consider that the advantage must be foregone for reasons of economy. It is suggested that, in order to compensate as far as possible for the loss of the cross-ventilation, the windows should be so constructed as to give the maximum of opening. The plans are returned herewith."

The architect has since carefully reviewed the details of the construction, the static conditions of the buildings to be provided, and the specification of the materials to be adopted, with a view to arriving at a form of construction which it would be reasonably easy to maintain, without serious additional maintenance charges, for a period of, say, forty years. We decided to refer the architect's report to a special section to consider, and we have now received their report. The section have considered in detail the various alternative methods of construction submitted by the architect, and we have approved the economies suggested by the section. These are set out below.

If the whole of these recommendations are approved, the cost per head of the main building will be £11 4s. 9d., as compared with £15 15s., showing a net reduction of £4 10s. 3d. per head, equivalent to a reduction of £4,045 on a standard school of 896 places.

We propose that the amended plans and specification shall be adopted as the authorised standard for future elementary school buildings, and we submit a recommendation accordingly.

(1) That the condensed planning scheme presented by the architect for the proposed Stowage school, Greenwich, be regarded as generally satisfactory.

(2) That the "drop system" of heating apparatus be adopted in lieu of the "two-pipe system."

(3) That thinner walls, etc., be provided involving a saving on the cost of brickwork.

(4) That Fletton brickwork faced externally with stock and special bricks be adopted in lieu of stock brickwork faced externally with red bricks.

(5) That ornamental brick cornices to elevations be omitted.

(6) That the concrete in floors of class

rooms, halls, and corridors be reduced in thickness and topped with coke breeze concrete, and that  $\frac{3}{4}$ -in. plain flooring be nailed thereto in lieu of the proposed provision of floors with fillets fixed in concrete and  $1\frac{1}{8}$ -in. grooved and tongued flooring to classrooms and wood-block flooring to halls and corridors.

(7) That stone dressings to entrances be not provided.

(8) That steel and concrete landings be provided to staircases in lieu of York stone landings.

(9) That Delabole slating be provided in lieu of Westmoreland slating, and that the scantling of the carcassing be reduced.

(10) That lines and pulleys be provided to windows in lieu of rod window gearing.

(11) That glazed dadoes be provided in the classrooms, halls, staircases, and corridors, the brickwork above to be fair faced and distempere.

(12) That savings be effected on various small items and also in respect of quantity surveyor's fees due to the reduced cost of building.

(13) That the provisional sum included in the specification for testing floors be omitted.

The above recommendations were adopted by the Education Committee.

[Editorial comment on this matter is made on page 117.]

## RESTRICTED TRADES.

A list of restricted occupations was issued last Thursday by the Ministry of Munitions, together with an order governing their operations. Briefly stated, the effect of this Order is to prohibit the employment of any new workers in the occupations affected, except for Government contracts or work of national importance, and then only with the consent of the Director-General. Former employees discharged from the Navy and Army may be re-engaged.

Twelve classes of occupations are affected, among them being:

Building (including horticultural houses).

House painting and decorating.

Stone, marble, granite, and slate quarrying, cutting, and polishing.

Wood carving.

Church organ building.

Also the manufacture of the following.

Gas and electric light fittings.

Safes and steel office furniture.

Steam or hot-water heating apparatus.

Garden seats, summer-houses, and horticultural buildings.

Shop-fronts and fittings.

Wood mouldings.

Enamelled slate.

Bricks (other than firebricks) and tiles.

Stained and decorative glass.

Wallpaper.

Brushes.

## NEWS ITEMS.

*The "Star and Garter" and a Tribunal Appeal.*

At the Law Society Appeal Tribunal last week Mr. Gilbert Scott appealed for his office manager, Mr. A. G. Crimp, passed Class A. Mr. Scott, who is giving his time and services in designing the new Star and Garter Home for Incurable Soldiers at Richmond, said that during the last three weeks the committee had asked for extensive alterations, involving an entirely new set of plans. They had agreed,

also, to increase the cost from £120,000 to £130,000, as originally intended, to £200,000. This additional work absorbed his whole time, and he was absolutely dependent on Mr. Crimp for the management of his office. Three months' exemption was granted, with leave to apply again.

### *Liverpool Cathedral.*

Last week a large number of members of the Students' Union, Liverpool School of Architecture, under the presidency of Mr. Gordon Hemm, visited the new Liverpool Cathedral (Mr. Gilbert Scott, architect). Through the kindness of Mr. Green, the clerk of the works, they inspected very thoroughly the work now in progress, also the newly completed Lady Chapel.

### *Waterproofing Hotel Vaults.*

We hear that the architect to the Great Northern Railway of Scotland, in building the Palace Hotel, Aberdeen, took the precaution of lining the roof of the vaults under the pavement with Pudloed cement, and that the result is most satisfactory. This is especially worthy of note, as penetration of water in work of this description is a difficulty often encountered, and one which is liable to cause much expense in remedying.

### *Inspectors of Government Buildings.*

Mr. Charles Tamlin Ruthen, M.S.A., Licentiate R.I.B.A., of Swansea, has accepted an appointment as inspector of Government buildings. The appointment is unpaid, and will not mean that Mr. Ruthen is leaving Swansea. It will be remembered that for some time past there has been considerable discussion in Parliament and elsewhere about the extent and the manner in which the Government had commandeered buildings for new departments. A few days ago Lord Curzon, in the House of Lords, announced that two new inspectors were to be appointed for the purpose of inquiring into the matter. The duty of those inspectors is to inquire into the utilisation of Government buildings and to report to the Committee that have been appointed for the purpose. Mr. Ruthen has undertaken one of the inspectorships. He has designed many important buildings in Swansea.

## OBITUARY.

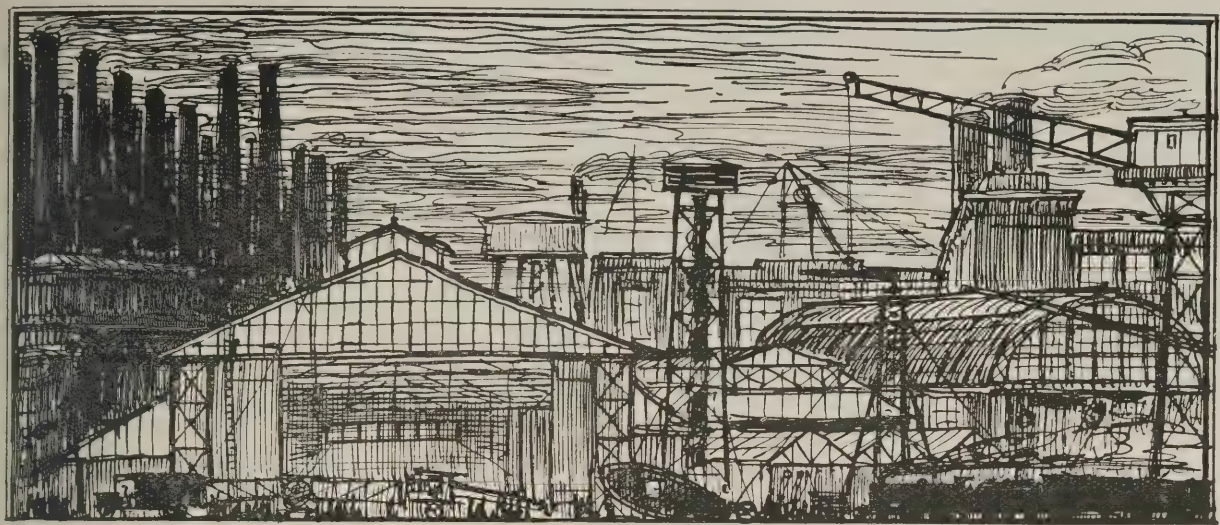
### *The late Mr. Hellyer's Estate.*

The late Mr. S. Stevens Hellyer, who worked as a pioneer in sanitary science, recently dealt with in our columns, left an estate which has been proved at £170,140 gross.

### *Mr. A. F. S. Bryden, Licentiate R.I.B.A.*

The death has occurred of Mr. Andrew Francis Stewart Bryden, I.A., Licentiate R.I.B.A., of Messrs. R. A. Bryden and Robertson, architects, of Glasgow. He was the fourth son of the late Mr. Robert Alexander Bryden, who had a wide reputation as an architect. The deceased gentleman was trained in the office of his father and also with Messrs. Oatley and Skinnell, Bristol. For the last ten years he was architect to the Orphan Homes of Scotland (Quarrier's), the Consumption Sanatorium and the Colony of Mercy for Epileptics, Bridge of Weir, and in that capacity designed the Elise Hospital, gifted by Sir Thomas Glen Coats, Bart. On the death of his father he completed, in collaboration with his partner, the Glasgow Maternity Hospital, and among his other work was the Berwickshire Higher Grade School, Duns.





## WAR BUILDINGS SECTION

### CANTEENS FOR WAR WORKERS.—II.

In our issue for February 21 we illustrated four canteens recently provided for the accommodation of War workers. We now give a further series of illustrations, comprising photographs and plans which we are able to reproduce by courtesy of the Canteen Committee of the Central Control Board (Liquor Traffic). These illustrations are taken from a booklet entitled "Feeding the Munition Worker," which has been issued by the above-mentioned Committee. A great deal of the matter in this booklet relates to details of cooking and administration which, though of essential importance, do not come within the scope of our own province, but there is a section dealing with the planning and construction of canteens which is directly of interest to our readers, and from this section we take the following particulars:

A separate building is desirable, where practicable, as the less resemblance the canteen bears to the works architecturally the better. Where a ground floor is impossible it may be necessary on account of limited space to place it over a workshop. Briefly, the premises of an industrial canteen should include:

- (1) An ample dining room with a buffet counter and serving counter, and separate accommodation for men and women, and, if desired an additional room or partitioned section for staff, foremen, etc.
- (2) A kitchen, properly equipped (with a warming cupboard for carried food).
- (3) A scullery.
- (4) Pantry and store rooms.
- (5) Office for manager or manageress.
- (6) Sanitary accommodation.
- (7) Paved yard for waste-bins.

The entrance doors should give direct access to the serving counters, with port barriers opposite the serving hatches. The kitchen behind the service counter should be central or terminal. There are substantial advantages in the former.

Where there are two dining rooms of considerable size, one for men and one for women, the kitchen should be placed be-

tween the two, with service counters fronting each dining room. The wash-up or scullery should open out of the kitchen and should abut directly on the main dining rooms with hatches for the passage of crockery, etc., direct to the wash-up sinks. Adequate storage and larder accommodation easy of access from the kitchen should be provided. Larders should face north and perforated zinc panels should take the place of glass in half the area of the windows to provide suitable ventilated storage for perishable food.

Ample window space (with a large proportion of the windows opening) is desirable for light and ventilation in the dining rooms, and in no case should the total glass area of the windows be less than one-tenth of the floor area of the various rooms in which they occur. The fanlights for casement windows should fall inwards, and be provided with glazed cheeks or gussets to admit of continuous ventilation and prevent draught.

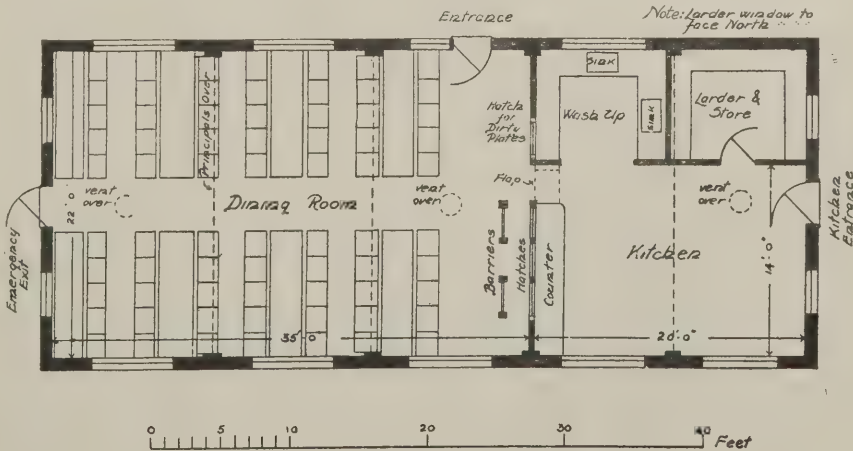
Roof ventilators should be provided at the apex of the roofs of the dining rooms.

Lantern lights with centre-hung opening sashes should be provided over the kitchen.

The accompanying four plans embody the principles outlined above. Plan A (reproduced on this page) is suitable for very small canteens. Plan B (also shown on this page) is suitable for larger canteens, especially where persons of one sex only have to be accommodated. Plans C and D (shown on the next page) indicate means of making provision for diners of the two sexes in separate rooms. Plan D is suitable for the largest canteens of this class.

The following are the approximate measurements of the kitchens required to contain conveniently the apparatus necessary for the preparation of full meals for the number of persons indicated:

Number of Dinners.	Size of Kitchen.
100 .....	20 ft. by 15 ft.
300 .....	25 ft. by 20 ft.
400 .....	30 ft. by 25 ft.
500 .....	35 ft. by 25 ft.
1,000 .....	50 ft. by 30 ft.



PLAN "A": CANTEEN FOR 70 WORKERS.



It is convenient to have a separate buffet for the sale of tea, coffee, light refreshments, confectionery, etc., distinct from the main service counter.

Unless there are special reasons for preferring a temporary building of corrugated iron, etc., the canteen should in general be of inexpensive permanent construction. The following form of construction is suggested:

**Walls:** 9-in. brickwork, rendered externally with Portland cement  $\frac{3}{4}$  in. thick and finished with a rough-cast surface. With large-span roofs brick piers of greater thickness will be necessary under the roof principals. The brickwork internally to be flat-pointed, with a painted dado to a height of 5 ft. and the brickwork above distempered, no plaster being used; or, as an economical alternative, the walls between the piers can be formed of two thicknesses of  $2\frac{1}{2}$ -in. concrete blocks with a 2-in. cavity.

**Roofs:** Boarded and covered with slates, the underside of boarding painted a cream colour.

**Floors:** Concrete with granolithic face.

It should be practicable to erect buildings of this character, even under the existing exceptional conditions, for not more than 5d. per foot cube, exclusive of central heating.

The cost of a canteen complete with equipment, lighting, and heating, on the basis of 8.5 sq. ft. for each person seated in the dining-rooms, should only in exceptional circumstances exceed £7 per place. It is sometimes practicable to arrange the meal intervals so that the workers can take their meals in relays, with considerable saving of space in the canteen.

It should be the aim to make the canteen as attractive as possible to the workers, to

make them feel that it is *their* canteen (not a charitable institution), a place where they can expect a good meal at a reasonable price under good conditions, and where they can leave the atmosphere of the works behind them. Irritating rules and regulations should be reduced to a minimum, and the workers' legitimate wants studied as far as possible.

As regards service, the best system is that by which the workers wait upon themselves, obtaining meals at the service counter and carrying them to the tables. This is undoubtedly the most economical, and, where proper arrangements for speedy service are in force, the most satisfactory.

It is essential to remember that the workers demand a *quick* service, and the efficiency or otherwise of the canteen depends upon the success with which this demand is met. (In this connection the illustrations on page 124 are of special interest, the one showing how the counter service is worked, the other showing what a large canteen looks like when the workers are in their places.)

#### The Canteen Committee.

This Committee,\* whose offices are at Canada House, Kingsway, London, W.C., was appointed by the Central Control Board (Liquor Traffic) to co-ordinate the services of the various voluntary and other societies engaged in improving facilities for the supply of good food at low prices. In national factories canteens are provided at Government expense wherever necessary. In controlled establishments the Central

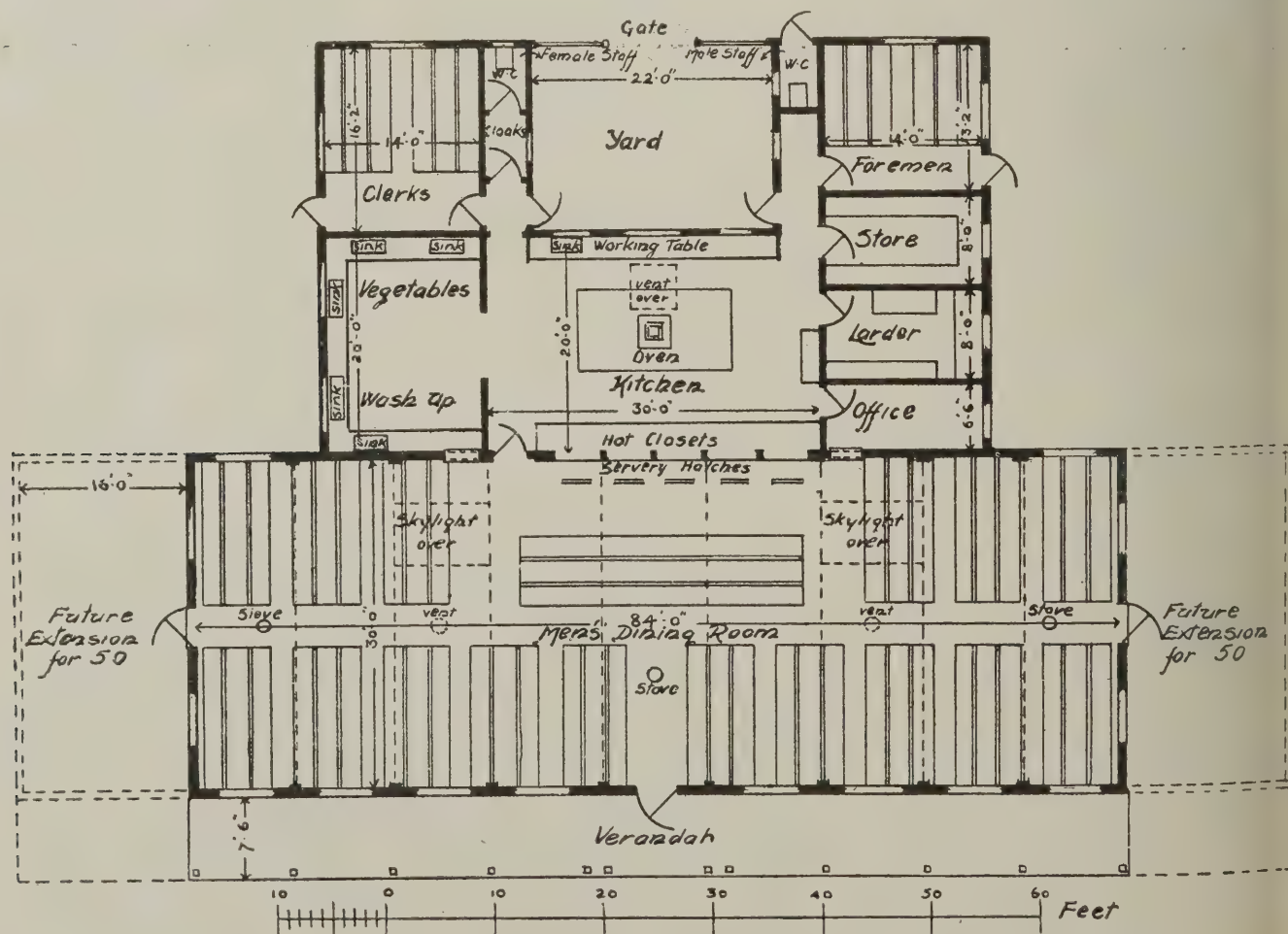
\* The Committee consists of Sir George Newman, M.D. (chairman), Lord D'Abernon (ex-officio as chairman of the Board), Major the Hon. Waldorf Astor, M.P., and Mr. W. Towle. The secretary is Mr. A. B. Cane, and the assistant secretary Mr. P. R. Higgins.

Control Board have been authorised by the Government to facilitate the provision of canteens. In such establishments the employer may charge the cost of construction and equipment of a canteen against current profits if the canteen is provided with the approval of the Board. In other words the expenditure, so far as it is approved by the Board, can be treated practically as a trade expense. Under this concession the State practically bears the expense of a reasonable canteen provision out of funds which would otherwise have accrued to the Exchequer. An exceptional opportunity of making this desirable provision for workers is thus afforded.

In voluntary canteens, that is, canteens provided by voluntary societies, approved by the Board, outside munition works but catering for munition workers, the Board are authorised to pay half the capital expenditure (where approved) involved.

It is within the power of the Minister of Munitions to require the establishment of a canteen in any controlled factory as a condition of approval, but up to the present the Ministry have as far as practicable left this matter in the hands of those responsible for the factory to make arrangements in accordance with local conditions and circumstances.

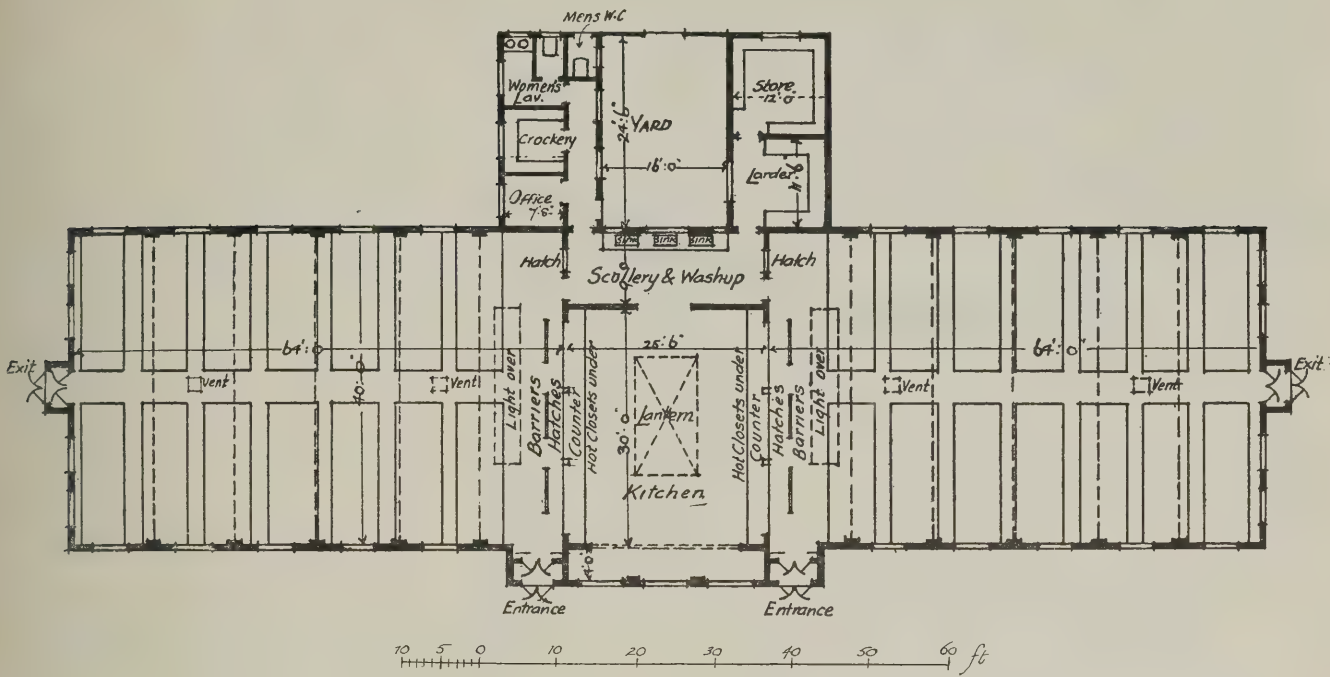
It is a striking indication of the progress of public opinion in this matter that recent legislation (the Police, Factories, etc. (Miscellaneous Provisions) Act, 1916, Section 7), has empowered the Home Secretary by special Order to require the occupiers of factories and workshops to make arrangements for preparing a supply of meals for their workpeople. For the successful working of an industrial canteen the goodwill of the employer is so essential that it may be hoped that resort to compulsion



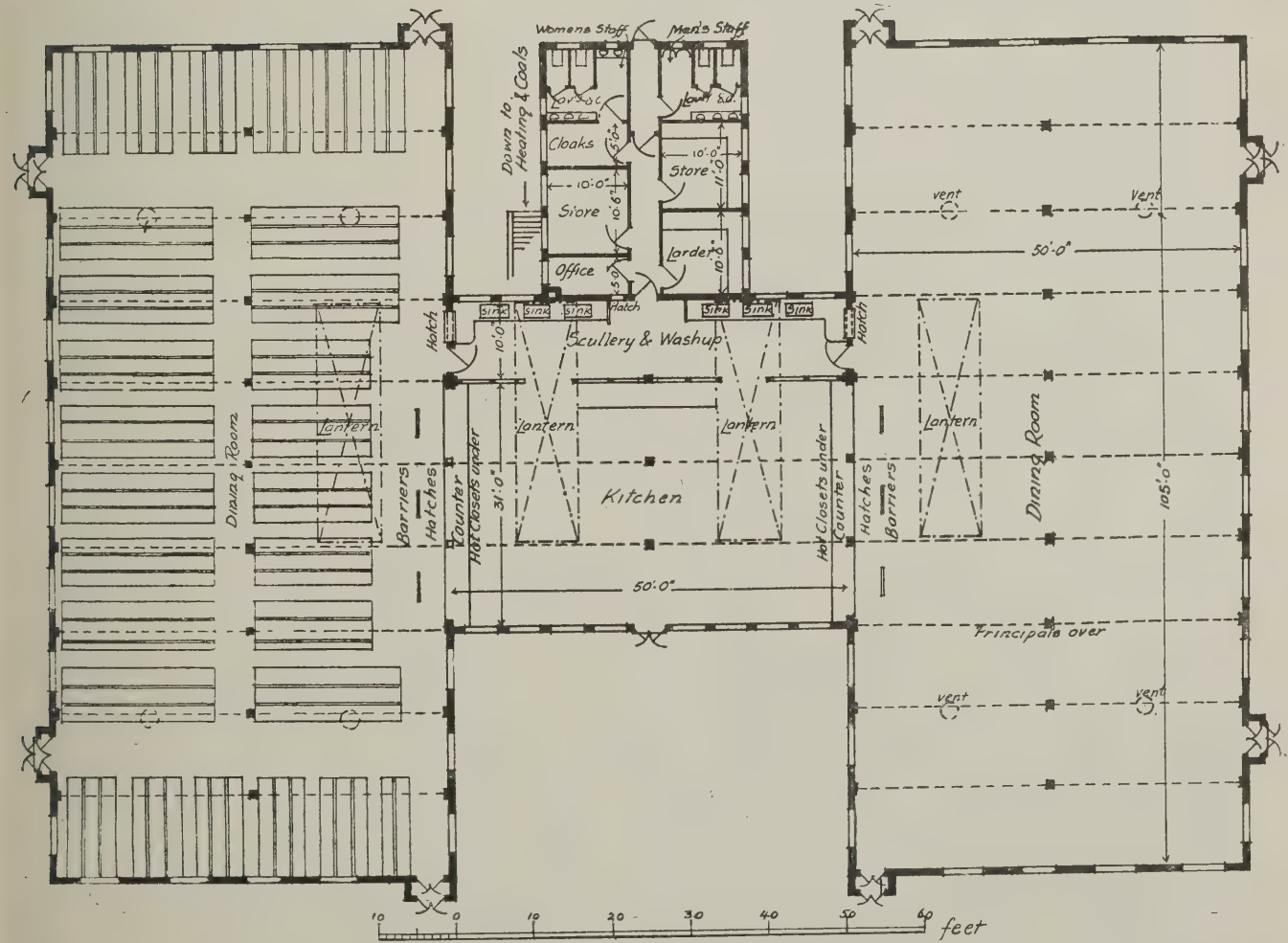
PLAN "B": CANTEEN FOR 300 WORKERS (WITH FUTURE EXTENSIONS FOR AN ADDITIONAL 100).

Note: The Kitchen shown is on the basis of 400 diners; for 300 it would be proportionately less—say 25 ft. by 20 ft.





PLAN "C": CANTEEN FOR 450 WORKERS.



PLAN "D": CANTEEN FOR 1,000 WORKERS.



COUNTER SERVICE.

will seldom if ever be necessary. But it now behoves every employer carefully to consider what will be the results of the stimulus which the canteen movement has recently received. These results, it may be confidently anticipated, will be highly beneficial all round—to the employer no less than to the worker, and, above all, favourable to national prosperity.

It becomes every day more clear that after the War the worker will demand an

increased participation in the fruits of his industry and that aspirations after a higher standard of living, which have been growing for years, and which the present crisis has revealed, will not be lightly relinquished. The employers who will stand the first chance of obtaining and keeping workers of the best and most self-respecting class will be those whose works afford the most ample means of a rational existence during the working day, and it is

apparent that of such means a comfortable and well-appointed industrial canteen is not the least important.

#### *Results of the Establishment of Canteens.*

Up to October last the number of canteens established in this country for munition and transport workers was about 500, providing accommodation for about 600,000, which figures have since been augmented, as new canteens are constantly being erected as the need arises with the extension of works and as the merits of a properly equipped canteen become generally recognised. As Mr. Lloyd George has said: "That men should get their meals—not in the old, squalid, uncomfortable conditions, but in conditions which are in themselves attractive and healthful—is better for the working man and for those who are in charge. It is better for all, and certainly better for the State. We are making a better country because we have the recognition that the interests of one section of us are the interests of all. . . . It is a strange irony, but no small compensation, that the making of weapons of destruction should afford the occasion to humanise industry. Yet such is the case. Old prejudices have vanished, new ideas are abroad; employers and workers, the public and the State, are all favourable to new methods. The opportunity must not be allowed to slip. It may well be that, when the tumult of War is a distant echo and the making of munitions a nightmare of the past, the effort now being made to soften asperities, to secure the welfare of the workers, and to build a bridge of sympathy and understanding between employer and employed, will have left behind results of permanent and enduring value to the workers, to the nation, and to mankind at large."



A CANTEEN DINING-ROOM FOR WOMEN WORKERS.



## MODERN FACTORY BUILDINGS.

BY MORITZ KAHN.

### *Multi-Storey Buildings.*

THE proper planning of a factory involves the highest degree of co-operation between the owners or the managers of the industry, on the one hand, and the architects and the engineers on the other. In order that buildings may be properly adapted to their uses, it is essential that these uses be fully known to the designer, and this requires complete and thorough explanation on the part of the owner, for the omission of some vital factor, at this preliminary stage, may later necessitate costly changes which a few words in time could have obviated.

### *The Three Types of Buildings.*

Buildings for manufacturing purposes necessarily vary in form according to the nature of the work carried out in them. They may, however, be roughly classified

Where the materials and machinery used are not unduly heavy or bulky, and where land is moderately expensive—as it usually is in manufacturing centres where labour is readily obtainable—the multi-storey type of building is undoubtedly the best for almost all purposes. It uses the site to better advantage than a one-storey shop, and can be designed to fit the requirements of any light manufacturing business. Originally built in frame construction, then in mill construction with brick walls, buildings of this type are now usually constructed of steel or reinforced concrete, with brick or concrete walls. The old-fashioned wooden sash has been superseded by steel sash, giving better light and lessening the fire risk, while solid interior walls (except for necessary fire walls and

The space required for the various departments will determine the lay-out of the building, subject to the requirements of economical construction. In general, the lay-out should be planned so that a uniform spacing of columns may be possible. This spacing should be from 16 to 25 ft. Special conditions may require longer spans, but these increase the cost of the building and have, in addition, the disadvantage of demanding girders of great depth, which may interfere with machinery—particularly where overhead shafting is used—and also make it more difficult to light the building properly.

The width of the building, when this is more than one storey in height, is determined by the need of natural light. The proper width will, therefore, vary according to environment and the conditions of



INTERIOR VIEW OF ONE OF THE FORD CO.'S BUILDINGS, DETROIT, MICHIGAN, U.S.A.

three categories. The first comprises buildings several storeys in height; the second, buildings of the weaving-shed type, one storey high, with saw-tooth roof; the third, buildings of the machine shop type, also one storey high, but with large clear spans, and usually provided with travelling cranes. This classification is not absolute, as a single establishment may include all of these types, built in conjunction with one another but used for different purposes, while, of course, there are buildings that fall into none of the groups, such as coal chutes, grain elevators, and other similar structures. The classification indicates, however, the three most important types of buildings, the first two of which are becoming standardised to a considerable extent, while the third varies greatly in its design and proportions.

lift and stair enclosures) have been eliminated, the space being divided as required by light partitions, carried on the floor slabs, which may be shifted to suit changing needs.

The possibility of change is one that needs to be taken into account in all industrial planning. A prosperous enterprise tends to grow and to require more space for its activities. The original lay-out, therefore, should be planned with a view to the possibility of future expansion without undue cost or inconvenience. But even with the greatest care in planning, it will often be found that some departments have too much space and others too little, and the structural divisions should not be of such a nature as to make this re-arrangement impossible in case the need for it arises.

different industries. The attempt to build over too great an area often produces buildings that are practically useless. Where some portions of a building are not as well lighted as others, however, they may be used for storage, if the work is of a nature requiring or permitting this utilisation.

While this type of building has many advantages, inasmuch as it makes the fullest possible use of the site, is economical in construction, and allows the use of overhead shafting, it also has certain limitations. It does not permit overhead lighting, except on the top floor, and the arrangement of machinery is limited by column spacing and the strength of floor slabs. Where a uniform lighting is needed throughout, the weaving-shed type is the most desirable, and where very large and



heavy machines must be installed, or a travelling crane is necessary to transport heavy loads, the machine shop type is the only one that will meet requirements.

#### *Buildings of Weaving-Shed Type.*

The weaving-shed type of construction, although it was, as its name indicates, originally devised for textile mills, is now used for many other kinds of manufacture. It affords a remarkably uniform light throughout the entire area without distinct shadows—a condition that is desirable for most classes of work. But it can only be used where land is relatively cheap, or on the top floor of a building which has ordinary side light on the lower floors.

The characteristic feature of this type of building is the saw-tooth roof, consisting of a series of unequally inclined ridges glazed only on the north side, which is the deeper of the two slopes and in many cases vertical. By this arrangement the lighting is very uniform, since no direct sunlight is admitted. On the other hand, the drainage becomes difficult because of a large number of gutters that clog up with snow in winter. Again, the use of overhead shafting is seldom possible, a matter of importance in many kinds of manufacture.

#### *Buildings of Machine-Shop Type.*

The machine-shop type of building is less capable of standardisation than either of the other two. The spans, heights, and designs of trusses vary greatly according to the uses of the building. This type is used extensively for such shops as do heavy metal-working, and also for stone and other industries. Steel framing is more often used than for the other types already described, for which reinforced concrete

has usually been found to be more economical. The variety of these buildings is too great to permit any detailed description of them here.

#### *The Appearance of a Factory.*

Some people think that appearance matters little in so prosaic a place as a factory. They take it for granted that ugliness in a factory is natural and inevitable. But, as a matter of fact, there is no necessity that factories should be ugly. Many American factories are decidedly imposing. All factories might be at least tolerably pleasant-looking.

In designing a factory so that it shall be attractive, one does not proceed by applying ornament to an ungainly building. This sort of thing has been tried, but always fails. The proper method is not to stick things on, but to arrange the things that must be there, to study the proportion of openings and solids, to emphasise structural lines by the use of colour and relief; in a word, to articulate the structure. This may be done both inside and outside the factory; it requires only a proper architectural knowledge, and the expenditure involved is but a fraction of the total cost.

The question may be asked: Is it worth doing? Undoubtedly it is, and for quite a number of reasons. In the first place, it has an advertising value. Every view of the factory that is published, whether in a newspaper, in the manufacturer's catalogue, or in an advertisement of any kind, produces some sort of an impression, good or bad. It is published with the idea of producing an impression, and certainly, from the standpoint of the owner's interest, this should be a good rather than a bad

impression. What may be termed the psychological effect on the employees is still more important, because more inevitable. A manufacturer may never publish a view of his plant, he may place his buildings where travellers never see, but he cannot keep his employees from seeing it and being affected by its appearance. If machines could be treated as machines, a clean, hard, sanitary installation would be quite sufficient. But they cannot. One of the most important things about an employee is his mental attitude toward his work. And one of the ways to improve this attitude—not the only way, it is true, but nevertheless a powerful one—is to make his environment agreeable.

The accompanying illustrations show two Kahn-system American "daylight" factories.

#### *After-War Building Operations.*

At a meeting of the Leeds Board of Guardians the Building Committee reported the receipt of a letter from the Local Government Board with respect to the return furnished by the Guardians of prospective building work to be undertaken after the expiration of the War. The letter suggested that the Guardians should prepare and forward the necessary plans so that all arrangements might be made for the immediate start of the work when the present restrictions are withdrawn. The principal items of the return are: Nurses' Home extensions (sixty beds), £9,000; imbecile ward extension (sixty beds), £4,000; nurses' dining-hall (to accommodate eighty), £1,250; laundry extension, £1,000; maids' home (to accommodate thirty-two), £4,000.



FACTORY OF THE PISTON RING CO., MUSKEGON, MICHIGAN, U.S.A.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MARCH 14, 1917.

TOI HILL STREET, WESTMINSTER.

VOLUME 45. No. 1158.

AN interesting sequel to the important case of the Metropolitan Water Board v. Dick, Kerr and Co., is the success of the appeal against the decision of Mr. Justice Bray, in the King's Bench Division on October last, that the stoppage of operations by order of the Ministry of Munitions did not determine the contract for the construction of two reservoirs at Littleton, Middlesex, and that consequently the property in the plant on the job was vested in the Water Board. In ordinary circumstances, it would have followed that the removal and sale of a considerable portion of the plant by the contractors would have been illegal, but in this case it was held that the contractors were not liable to the Board in damages for the sale, the property in the plant having been invested in the Ministry of Munitions, who paid the contractors £42,000 for it. It would not be quite fair to assume that the King's Bench judgment was altogether inconsistent and illogical in its findings—that if the contract remained binding no matter who stopped it, then the contractors were liable for the removal of plant, no matter who purchased it; for the two points do not necessarily stand or fall together, either in logic or in law. In the lower court, it was not made clear that the contract was ended, but only that it was suspended, by order of the Ministry of Munitions. Consequently the clause relating to removal of plant held good; and here arises the crux of the matter. Granted that the Munitions Ministry could override the civil law by suspending the contract as a whole, had they not also power to override one of its clauses by purchasing some of the plant? But to whom should they pay the money—to the actual and permanent or to the contractual and temporary owners? The legal fiction of temporary ownership was not strong enough to resist the stress of exceptional circumstances.

Mr. Justice Bray apparently felt that to penalise the contractors for realising on what was essentially their own property would have been to overstrain the fiction of constructive ownership—would have been, in effect, to put the money into the wrong pocket. On this point his judgment has been upheld in the Court of Appeal, which, furthermore, has held that the contract was dissolved, and that therefore the remainder of the plant may be removed by the contractors, who resume ownership by the cancellation of the contract. As it seems unlikely that there will be a further appeal, the case is of importance as establishing a precedent that may affect private as well as public contracts, and could prevent much expensive litigation.

What is Manchester about? Having bought the old Infirmary site with the express object of erecting on it some sort of palladium of the fine arts, the Corporation now has before it a proposal to substitute some sort of a tramway shed. Against this shocking anti-climax the council of the Manchester Society of Architects has very properly lodged an energetic protest. Fortunately it is only a special committee on the passenger transportation problem that has put forward this dismal scheme, and, in view of the possibility that the Corporation may have the wisdom and strength to refer it back, unrestrained indignation need not be wasted on a committee that is merely bringing forth fruit after its kind. It must be more than a decade

ago that the Corporation bought the site of the infirmary for £4,000, with the intention of adding to the amenities of the city. It is now proposed to use it in the contrary sense, to the scandal of Manchester's Piccadilly. The committee's proposal suggests the inveterate opportunism of the baldly utilitarian mind, which, as in the instance of the London County Council's newly adopted policy of cheapening schools beyond moderation, is ever ready to pounce upon occasion. But surely the transition from an art centre to a tramway centre is too violently reactionary to succeed, and the Manchester Society of Architects should have no great difficulty in persuading the Corporation of the practical unwisdom of putting to sordid use a site that should be dedicated to dignity.

Possibly the best course would be to oppose the utilitarian proposal by arguments that meet it on its own ground; and probably an excellent case could be made out on these lines. It is bad business to fill so valuable a site with tramway sheds, which, instead of uglifying and congesting the centre of the city, would be more conveniently and less expensively relegated to the suburbs, as they are in London, where a proposal to create a vast tramway centre in, say, Piccadilly would provoke an overwhelming storm of indignant protest. It is a significant fact that tramways, offering a tremendous obstruction to traffic, are not tolerated in the central streets of London. That, sooner or later, they will be abolished in favour of automobiles may not seem to be a strong argument against the sheds, which could easily be converted to the new occasion; nevertheless, the greater mobility will give greater freedom of choice in the housing, which can very well be distributed among small, obscure, and inexpensive sites in back streets that are inaccessible to tramways. Obviously, therefore, the erection of a huge tramway centre in the heart of the city would be a huge mistake from the purely economic standpoint. This argument from economy, and insistence on tidiness and convenience as commercial virtues, and the stress on the business value of civic dignity—or, let us say, of "keeping up appearances"—are points that the Society may legitimately press home in a business community which would probably be less tolerant of any more direct presentation of merely æsthetic ideals.

A lady who has lately seen much of the area in which the great explosion occurred writes to "The Times" to express her concern at the manner in which some of the rebuilding is being done. She thinks that the ruined district was first built up some fifty years ago, when, as she says, "jerry-building was rampant," and she is responsible for the allegation that in the rebuilding the bad conditions of the old days are in some instances being perpetuated. "Surely," she comments, "the sites of these houses should be concreted over." Another allegation she puts forward is that "the pipes carrying the domestic supply of water are run under the floors on the earth," and she infers reasonably enough that defects in them might remain undiscovered for months, and then "what chance of health have these people in their homes?" The question is very pertinent, if it is based on accurate



observation, and if the conditions described are at all common; but it is difficult to believe that the authorities would permit any very flagrant infraction of the by-laws, even though the utmost speed in rehabilitation is essential; for they must surely feel that, as the lady remarks, "delay is better than disease." But is she perhaps generalising too freely?

\* \* \* \*

The under-floor pipe trouble is only too familiar, and in small property especially, it often propounds a problem that is not easy of solution. Gas-pipes and water-pipes buried under floors are dangerous enough; but, in various parts of the country, there must be thousands of old houses in which sewage pipes run under the floors of living-rooms, from the back premises to the sewer in front of the house. In modern houses, this condition is always avoided; but where it is found in old houses local authorities do not invariably insist upon immediate reform, which involves the heavy expense of forming a sort of subsidiary sewer at the backs of the houses. For the running of water-pipes and gas-pipes it should be possible to devise a much more convenient arrangement than that of concealing them under floors which have to be pulled to pieces before a defect can be located. They should be made easily and at all points accessible, even at the cost of a little unsightliness; but reform in this respect is not likely to be general until it is enforced by authority. Gas and water corporations especially would welcome a change that, though costly to inaugurate, would ultimately effect large economies, besides making for safety and convenience.

\* \* \* \*

An indication that Ministers are disposed "to ask the men who know" is gratifying. We therefore welcome, though without much enthusiasm, the announcement that the Minister of Labour has appointed a committee of building trades-union representatives, and that a corresponding committee of employers' representatives is to be formed, to render expert advice in the management of the Labour Exchanges in so far as their operations relate to the building trades. As a matter of theory and principle this is obviously the right thing to do. It is a pity that this course was not adopted years ago, when the Labour Exchanges were inaugurated. Not that we regard such committees as being essential or desirable. It remains to be seen how they work—whether they will work together harmoniously or whether they will not rather set up a sort of stable equilibrium which will produce the interesting but untoward condition known as "dead-lock." This is an awkward time for making such an experiment. Ascertainment as to the efficiency or otherwise of these committees should have been made years ago, when normal conditions would have provided a fairer test, and criticism would have been more free. We should now be gathering the harvest in the field that we are just beginning to plough. There is, however—or there certainly ought to be—this set-off of advantage—that, created at such a crisis, the committees of employers and employed should be but little inclined to antagonise each other with the old bitterness of spirit, should set aside all minor differences, sink all petty sectional or selfish interests, and pull together for the good of the country. It would appear that the respective committees are to be kept separate. This is perhaps wise. A joint-committee would have been too numerous, and made up of elements too diverse for smooth working; but the advantage of employers and workers meeting face to face, and thereby acquiring opportunities for understanding each other better, may be secured by the appointment

of joint-sub-committees—a point that certainly cannot have escaped attention. Other trades are to be similarly served; and hence arises the serious problem where are they to meet? If the scheme succeeds, will be necessary, in due time, to erect a large number of trade halls—perhaps as addenda to the Labour Exchange buildings, but preferably, we venture to think, as independent buildings which would supply the crying need, for buildings in which all kinds of public meetings could be held. The movement suggests many possibilities of development.

\* \* \* \*

It is an encouraging sign of the times that the Press of to-day is giving so very much more attention to amenity than the Press of yesterday was willing to accord. It is cheering, also, to find that architects of eminence are availing themselves of this opportunity. For instance, Mr. Paul Waterhouse, who wields a facile pen, has written in the "Daily Express" a delightful article on "What to Do With London." Deprecating "whole tracts of buildings in which the design is either woefully careless and uneducated or wilfully and satanically inventive," he adds, "Perhaps only architects will know what I mean by this attack on originality. But architects understand that there is a kind of misplaced creativeness which is the very doom of art in architecture, and that the effluence of melancholy which breathes from some of our thoroughfares and casts its gloom alike over architects and men in the street (though the latter may not be able to explain it) is due to the complete departure in these designs from those conditions in form and composition which alone can keep architecture sweet, wholesome, and delightful." He compares the "originality" to "an attempt to improve on the type of lovely girlhood by adding thirty per cent. to the size of the nose or transposing its position with that of the mouth." It is a comparison that, by its violence, may surprise the man in the street into a vague and disquieting sense of the enormity of originality in design; but he could not be convinced unless concrete examples were carefully analysed before his eyes. Demonstration, however, is denied us; it would injure too many interests—all the "shocking examples" being indisputably and flagrantly modern! There is, indeed, a grammar, an established syntax, of architecture, and he that is guilty of any breach thereof stands self-condemned. Withal, the strictest observance of the wholesome restraints of grammar does not in the least curb either originality or felicity of utterance.

## THE QUESTION OF PAPER ECONOMY

AS everyone knows, paper supplies have been reduced by one-half, in accordance with the scheme for effecting drastic economies in our imports. This has imposed the necessity on new papers and journals to do their utmost to eliminate elements of waste, in furtherance of which aim some newspapers have abolished the system of "sale or return." We ourselves do not find it necessary to do this at the present time, but we would ask our readers to aid us in economising paper. They can do this in either of two ways—(1) by placing a direct subscription for this Journal, or (2) by making a point of getting their copies regularly from the same newspaper agent. It is obvious that if a reader buys his Journal here this week and there next week, newsagents cannot determine the exact number of copies they may want in any single week, and the result is bound to be wasteful in "returns" (*i.e.*, copies returned unsold). This was thought, in the national interest, to be reduced to the smallest possible amount, and we therefore ask every reader to make a point of adopting one of the two methods mentioned above.



## HERE AND THERE.

AFTER "joy riding" for a week at the back of the Front, clad in khaki, as "camouflage," Mr. Bernard Shaw has been continuing his joy-riding at home, in the columns of the "Daily Chronicle," and one is left with the impression that, after all, the most important service rendered by the Western Front is to have provided a background against which Mr. Shaw can show himself off to fullest personal satisfaction. We are so accustomed to be entertained or exasperated by whatever he chooses to say, that the many entertaining and exasperating things in his three "Daily Chronicle" articles fit in quite properly with the regular order of this planet's appointments. In that he says about the devastations of War, however, there is a note which is almost sufficiently reasonable to be unShavian, and I take leave to give the following extract: "The devastations of War are," he says, "not all to be deplored. I shall not attempt to console those mourners for the Louvain library who have always voted against a penny rate for a library in their own parish; and I will not pretend that Ypres and Arras are as pleasant to see as they were when I saw them in peace. But I have been a member of a sanitary authority concerned with the clearance of slum areas and the administration of Building Acts; and the tragedy of the Somme district began for me in some of the villages which have not been demolished, not in those which have. A comparison of what the Germans have done to Albert with what I should like to do to London or Manchester would make the Kaiser seem a meritable Angel of the Passover beside me. As to our mediæval Cloth Halls and the like, what right had we to sponge on the Middle Ages for the beauty we could not produce ourselves? . . . As soon as we really want an Ypres of mediæval charm we can have it. If we do not want it, nobody but a handful of members of the Art Workers' Guild will suffer the smallest privation by the smashing of the Cloth Hall and the cathedral. I have loved these things and taken trouble to see them as much as any man; but I know that as good fish are in the sea as ever came out of it, and better. When the affected taste for fish becomes a genuine imperative appetite, as it was from the twelfth century to the fifteenth, those fish will be caught. . . ."

As to this, there are, as in most of Mr. Shaw's declarations, as many half-truths as truths. It is of course futile to pretend that every church tower which a German shell hits in mistake for a hospital is an irreparable loss to Art. Candidly, one might say that though it is a prodigious waste to spend thousands and thousands of pounds in blowing buildings to bits, many of these buildings were not really the irreplaceable treasures and precious heritages of the past they are often supposed to be, for the simple reason that the restorer in peace times had been very thoroughly at work, and you could not honestly say of their fabrics that they were ancient: as a fact, they were modern, and the precise degree of regret at their being riddled by shell is only to be settled by the worth of every individual case: and here I must say that there are many "old" buildings which I could well spare before the modern ones. But all Mr. Shaw's persiflage under the guise of normal sense and realism does not get rid of the fact, for instance, that grand work of the past is gone for ever with the shattering of the wonderful mass and the superb figure sculpture of Reims, or that St. Pierre at Louvain actually enshrined fine craftsmanship that went to the flames entire, or that the noble western tower of Ypres is an irreparable loss. That is where Mr. Shaw's half-truths are so wide of the mark.

UBIQUE.

## THE PLATES.

*Duke of York's Column, London.*

MCKIM, when he came over to this country to receive the Royal Gold Medal, said that the view of the Duke of York's Column, with its broad flight of steps, and the flanking blocks of Carlton Terrace, was the finest thing of its kind in London: with which opinion the majority of architects will, we think, agree. There is a grand scale about the scheme, and the setting is truly monumental. The monument commemorates that same Duke of York, Commander-in-Chief of our Forces in the early years of the nineteenth century, who is immortalised in the doggerel which tells that "He had 10,000 men, He marched them up to the top of a hill, and marched them down again. And when they were up they were up, And when they were down they were down, And when they were only half-way up, They were neither up nor down." To this second son of George III. the monument was erected by private subscriptions. A competition for designs was instituted in 1829, and the design by Benjamin Wyatt, eldest son and pupil of James Wyatt, was selected. The erection of the monument was undertaken by a Mr. Nowell, of Pimlico, who agreed to complete it in every respect, with the exception of the statue, within a period of two years, and for the sum of £15,760 9s. 6d.: actually he finished the work in about a year and eight months. As nothing but a few bare particulars of this monument is to be found in any book generally available, we think it worth while to give the following description from Loudon's almost forgotten "Architectural Magazine" of 1835: "The architect and builder were put in possession of the ground on April 25, 1831. The excavations were begun on the 27th of the same month, and were finished in twenty-eight days. These excavations were dug to about 22 ft. below the general surface, in order to obtain a solid stratum of natural earth; and an artificial foundation was then formed of concrete. This foundation was in form the frustum of a pyramid, covering a space of 2,809 superficial feet at the top. A course of Yorkshire stone slabs, 7 in. in thickness, was laid all over the surface of the concrete when brought up to half of its height—that is, at 11 ft. 6 in. above the level of its base line, in order to equalise the pressure from above. A second course of stones was for the same purpose laid upon the top of the concrete. This foundation, which was laid on May 25, 1831, was finished by June 25, and three weeks afterwards a start was made with the masonry. The masonry was begun with a course of rough granite laid on the top of the Yorkshire stone slabs, and the pedestal, which is 16 ft. 8 in. high, and consists of ten courses, is built of Aberdeenshire grey granite. The capital and base of the column are also of grey granite, but of a darker tone of colour. The shaft of the column and the acroter or upper pedestal are built of Peterhead red granite. The shaft, from the top of the base to the bottom of the capital, consists of twenty-six courses. On the west side there are seven apertures, and on the east side six, for the admission of light to the staircase. The column, which is of the Tuscan order, is 94 ft. 4 in. high, including the base and the capital. The inferior diameter is 10 ft. 1½ in. and the lower diameter 11 ft. 7½ in., so that the proportion of the column is fully eight diameters. The acroter, which is 12 ft. 6 in. high, and consists of seven courses, forms at once a covering to the staircase and a pedestal for the statue. The upper bed of the abacus (on the outer edge of which is fixed a plain substantial iron railing) forms a gallery, to which winding stairs ascend through the interior of the column. The outlet to this gallery is by a door in the east side of the acroter. The stairs consist of 168 steps, each 2 ft. 4 in. wide. Each course in the shaft is exactly the height



of five steps, and these steps are placed alternately at right angles to those of the preceding course, so that four stones, each containing five steps, form one complete round of the staircase. One peculiarity of the construction is that the five steps of each course, as well as the newel or central pillar, together with the stone which forms the outer wall, are all cut out of a solid block. When the masonry of the monument was completed, in the month of December, 1833, the statue, which is by Westmacott, was not finished; and as the artist required several months longer for its completion, it was thought advisable to remove the scaffolding. When the statue was ready, the contractor erected a simple scaffolding of poles and ropes, by means of which the statue of the Duke was hoisted up to its pedestal. The complete height of the monument is 123 ft. 6 in., and it is therefore of about the same dimensions as Trajan's column at Rome. The height of the statue is 13 ft. 9 in., which makes the total height, monument and statue together, 137 ft. 3 in. The monument was opened to the public on April 23, 1834. One shilling per head was charged for admission, and it is interesting to note that the funds thus raised were applied to the relief of soldiers' widows and orphans."

#### *Staircase, Kinfauns Castle, Perth.*

Kinfauns Castle, three miles south of Perth, was built from designs by Sir Robert Smirke about 1826, in what was then considered to be Gothic. Some years ago considerable internal alterations were carried out to the design of Mr. F. W. Deas, F.R.I.B.A., of Edinburgh, the chief among these being the provision of a new main staircase. In order to gain space for this, the 3 ft. thick internal walls were cut out, and 9-in. brick substituted, the tower which comes above this portion of the house being carried on steel girders. On the first floor, what was previously a bedroom was opened out to form a gallery that adds interest to the staircase. The steps of the latter are of teak and the rest of the woodwork is of oak. The finials have heraldic significance. In them can be followed the procession of successive owners of the estate, beginning with the posts at the foot of the stair, which carry the arms of the City of Perth and the Knights of St. John, and ending at the top with those of Gray, whose male line merged in that of Stuart, the family name of the Earl of Moray, the present owner of Kinfauns Castle. Neither panelling nor permanent electric-light fittings were fixed when the photograph of the staircase reproduced on our plate was taken. The woodwork was executed by Messrs. Scott Morton and Co., of Edinburgh, to whom, and to their foreman

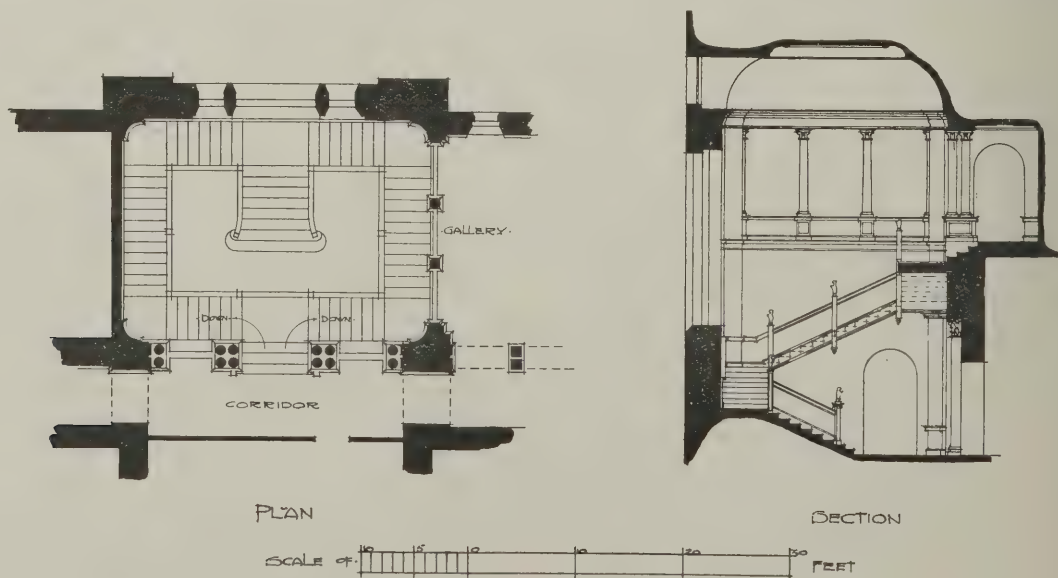
carver, Mr. William Beveridge, great credit is due for the spirited interpretation of the architect's design.

#### *Houses Facing Alfred Square, Deal.*

No words are needed to emphasise the charm of the street-front of small houses of late eighteenth-century date; for the view is immediately captivating. Incidentally it serves to indicate that the style was not all synonymous with monotony, as some people seem to think.

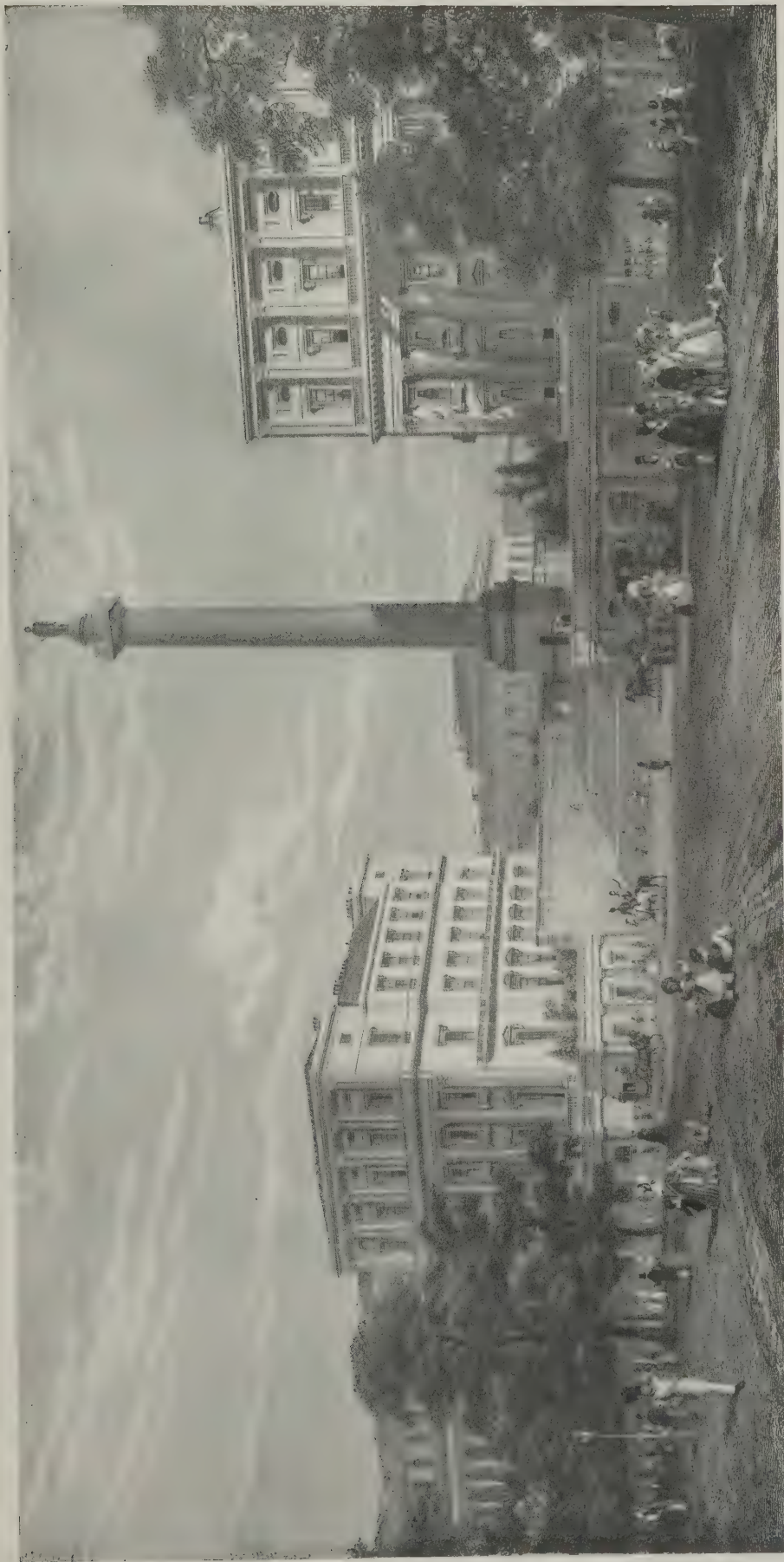
#### *New Chemistry Laboratories, Oxford*

These were opened last year, and represent the most up-to-date ideas in research laboratories, over which Professor Perkin presides. The necessary funds for the building were provided by Mr. C. W. Dyer and Mr. Perrins. The two names, "Perrins and Perkin," have been ingeniously associated by the architect, Mr. P. Waterhouse, in a chronogram cut in a stone on the main façade to South Park Road. Messrs. Armitage and Hodgson were the general contractors. The plan of the building comprises a central block, containing the entrance and main staircase, a service-room, the Professor's room, laboratory, and private room, with two wings, each consisting, on the upper floor, of a large laboratory, 64 ft. by 35 ft., and a lower floor divided into separate research rooms. Of these wings the western is now erected (as shown in our photograph of the exterior), but the eastern remains to be added later, if funds are forthcoming. The principal feature is the large laboratory. Its height to the apex of the roof is 33 ft. It is lighted by a continuous skylight, as well as by large windows, each of which is fitted with a glazed fume chamber. The piers between the windows accommodate the flues. The roof is of pitch-pine, the walls are of glazed brick, the metal part of the windows is of bronze, the drainage channels are of stoneware, and the benches are of pitch-pine with mahogany tops. Electricity is employed throughout for lighting, for ventilation, and for working a powerful lift, which goes right through the building to the roof itself, and is fitted for experiments best conducted in the open air. At the western end of the wing are a library and lecture theatre. The laboratories are in full use, the whole staff being engaged in preparing special drugs for military purposes, and in investigations and experiments which aim at the recapture and promotion of the British dye industry. Side by side with this the University has under consideration a vital change in the chemical curriculum of its school, which will make "research" a necessary part of the course of every chemistry student worthy the name.



STAIRCASE, KINFAUNS CASTLE, PERTH.





COMMEMORATIVE COLUMNS AND OBELISKS. VI.—THE DUKE OF YORK'S COLUMN, ST. JAMES'S PARK, LONDON.

BENJAMIN WYATT, ARCHITECT.

*From an engraving by Thomas Higham.*

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MODERN DOMESTIC ARCHITECTURE (SERIES II.). XLVIII.—STAIRCASE, KINFAUNS CASTLE, PERTH.

F. W. DEAS. F.R.I.B.A., ARCHITECT.

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DETAILS OF CRAFTSMANSHIP (SERIES II.). XXIII.—CARVED FINIALS ON NEWELS OF STAIRCASE, KINFAUNS CASTLE, PERTH.

F. W. DEAS, F.R.I.B.A., ARCHITECT.

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Photo : Francis R. Taylor.

SMALL HOUSES OF THE LATE GEORGIAN PERIOD (SERIES II.). XLII. - HOUSES FACING ALFRED SQUARE, DEAL.

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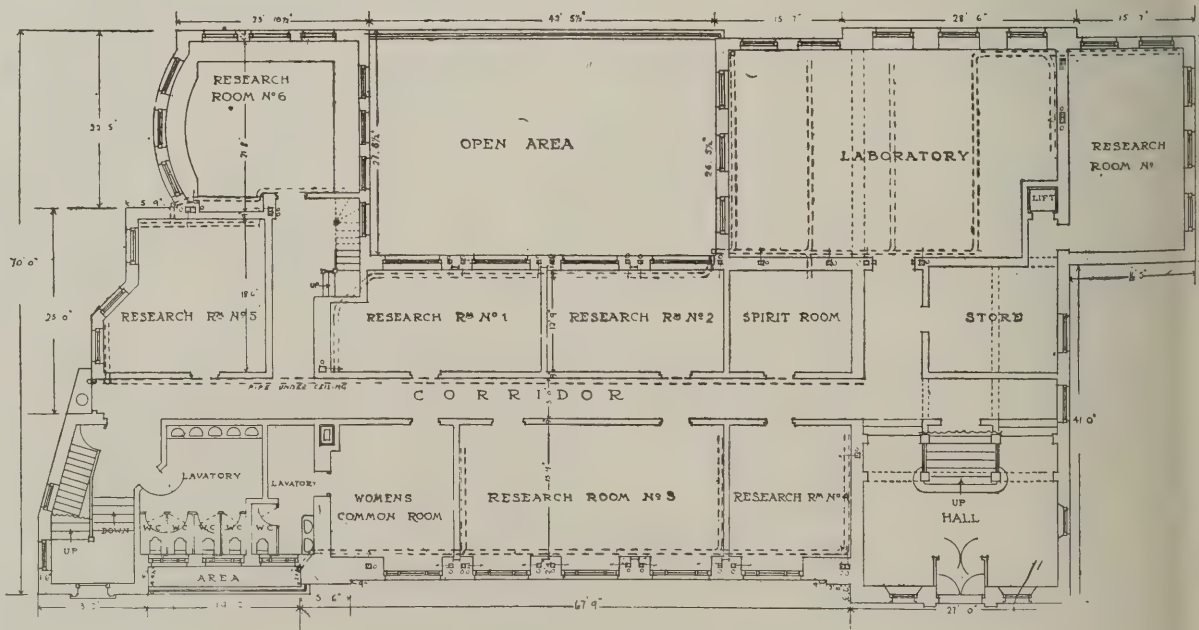
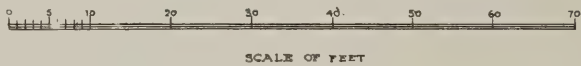
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Façade to South Park Road.

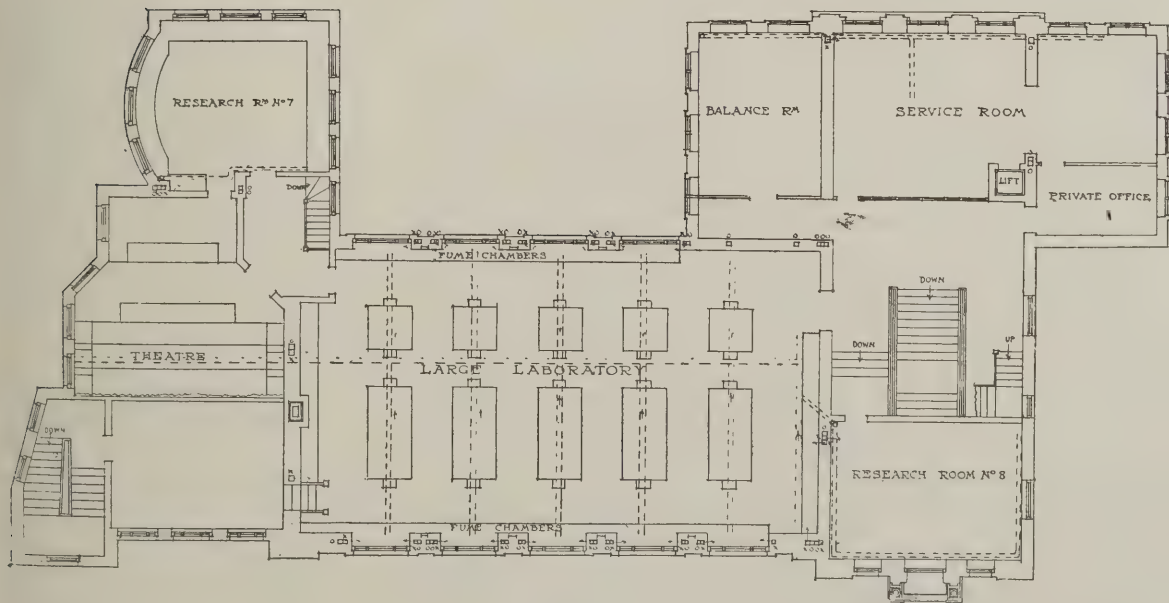
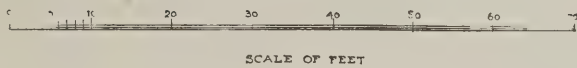


Ground-floor Plan.





Main Laboratory, First Floor.



First-floor Plan.

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## THE MAIN DRAINAGE SYSTEM OF LONDON.\*

BY GEORGE WILLIAM HUMPHREYS, M.Inst.C.E.

TWO papers dealing with the Main Drainage System of London are to be read in the Proceedings of the Institution of Civil Engineers. Sir J. Bazalgette, 1865, described intercepting sewers which had been constructed shortly before the date, and Messrs. Worth and Crimp might the subject up to date in 1897. The present position of the undertaking, at the end of 1916, is described in this communication.

*Primitive Beginnings.*

London was originally drained by means of the old open tributaries of the Thames, examples of which are the Rother Creek, the Westbourne, the Kilburn, the Fleet, the Walbrook, etc., these tributaries, although covered in, perform the same function to-day. At an early stage cesspools were introduced. Following upon the introduction of the water-closet in 1810, the overflow from the cesspools into the sewers, at first prohibited, became permissive, and in 1847 became compulsory. Cesspools were then abolished, and the state of the Thames became offensive by reason of these cesspools discharging within the boundaries of the metropolis. In 1855 and 1858 the Metropolitan Management Acts were passed, whereby the Metropolitan Board of Works was constituted, and Mr. Thomas Bazalgette was charged with the duty of providing and controlling a set of main arterial sewers to drain the metropolis, a similar duty as regards local sewers being entrusted to local parishes or vestries. A system of large intercepting sewers, which ran from the west of London, was decided upon and constructed. They discharged into the Thames at points below the metropolis, the outlet for the northern side of the Thames being effected at Barking, and that for the southern side at Crossness. The discharge was effected on an ebbing tide, the sewage in the tidal intervals over the flood of high water being stored in reservoirs at the outfalls.

*Royal Commission Report of 1884.*

In 1884 a Royal Commission reported on the state of affairs then existing, the discharge of crude sewage into the river and the new outfalls having been found to produce disagreeable effects, owing to the sewage taken for the discharge to reach open water, due to the daily tidal oscillations. In consequence of this report, works were undertaken to obtain precipitation of the sewage at the outfalls, the resulting sludge being taken out to sea and discharged in the vicinity of the Maplin Sands by means of specially constructed vessels.

*The Great Work of Baker, Binnie, and Fitzmaurice.*

Since 1897, the date of the last communication to the Institution, the London County Council, constituted in 1889, has carried out many large and important works for the enlargement of the system and the amelioration of the drainage conditions over the large and populous areas now drained. During the first ten years of that body's existence many important works were undertaken, but in 1899 it adopted a scheme, framed upon recom-

mendations put forward by Sir Benjamin Baker and Sir Alexander Binnie, to enlarge the arterial system, at an estimated expenditure of £3,750,000; and in 1903 it decided to expend, as a complement to these works, another £737,000, on a scheme prepared by Sir Maurice Fitzmaurice for storm-water drainage sewers and works. Upwards of £4,000,000 has been expended on this scheme up to date, the advent of the war having delayed completion of certain works. The old intercepting and outfall sewers, both on the north and on the south side of the river, have been practically duplicated, and large provision has been made for the dealing with heavy rainfalls by the provision of storm-water sewers and pumping-stations. Altogether about 87 miles of sewers, the greater length of which consists of large main lines, have been constructed by the London County Council. Dependent as London is upon the tidal level in the Thames for a drainage discharge, the existence of a large area of twenty-one square miles in the heart of the metropolis, the level of which is below very high water, and ten square miles of which is below the level of an average high water, makes the storm-water drainage problem a difficult one to deal with completely. The legislature has recognised this by imposing restrictions on the erection of dwelling-houses on the low-lying area when certain conditions prevail. The author is of opinion that there is need for further legislation in order that the problem may be satisfactorily dealt with in the future, and that further provision will have to be made in the direction of providing additional storm-water outlets to the Thames, the provision made as regards intercepting sewers probably being sufficient for many years to come.

*The New Intercepting Sewers.*

Several features of great interest presented themselves during the construction of the new intercepting sewers. The most marked was the comparatively small disturbance caused to the general community during the progress of the works, carried out as they were through the most populous parts of the metropolis. A system of tunnelling was adopted wherever possible, and very long drives were made, reaching in one case up to 6,120 ft. Wherever sewers passed near to valuable properties, the tunnel was driven with a shield, and cast-iron segments were inserted, lined on the inside with concrete and brickwork. This method of construction proved also very valuable where bad ground was encountered, the Thanet sands heavily charged with water being satisfactorily dealt with by these means. The highest class of workmanship has been insisted upon even in small details. Where, owing to the lapse of time, defects have developed in the old works, improvements have been effected, but the main features of the scheme laid down and initiated fifty years ago remain to-day in their original form, and have an equally long prospect of utility before them.

*Drainage of Outside Areas.*

The population of the Administrative County of London at the last census (1911) amounted to 4,500,000, in round figures. The London County Council has

admitted to its drainage system the sewage from certain outlying areas, as, in fixing the county boundaries, considerations of watershed areas were not adhered to. In agreeing to drain these outside areas, the proviso has generally been made that only sewage to the extent of about fifty gallons per day per head of population on the area served is to be delivered and dealt with. Storm-water flow is consequently excluded. The system therefore dealt with an estimated population of 5,334,731 in 1911, and the indication given of change in these figures to the present date (1916) is that, as regards the county area, there is a slight diminution, while there is an increase in the out-county areas. The total quantity of sewage computed to have reached the outfalls was about 200,000,000 gallons a day in 1894-95, and 280,000,000 gallons a day in 1914-15, an increase of 80,000,000 gallons per day over the discharge of twenty years ago. Compared with the past this is composed in part of rainfall that formerly was discharged by means of the old river-valley sewers and was not intercepted.

*Removing the Sludge to Sea.*

The effect of the elimination of the greater part of the suspended solids at the outfalls, and their conveyance to sea as sludge, when this operation was in working order in or about the year 1893, was immediate. The change in the condition of the foreshores and the river has been remarkable. The cost of removal of the sludge to sea during the past ten years was on the average, for working alone, 3.8d., or, including capital charges, 4.4d. per ton of sludge dealt with. The cost of precipitation over the same period has amounted, on an average, to £1 3s. 4d. per million gallons dealt with, including capital charges. The discharge of the sludge in the outer estuary of the Thames has been accomplished without any prejudicial results, and certainly by no other method could a like result, as regards low cost and immunity from nuisance or harm, have been attained. The London County Council has purchased about 750 acres of land in the neighbourhood of and surrounding its outfalls. This has the effect of isolating the outfall-works, and at the same time the land would be available if later on future developments should demand the treatment by tried bacterial or other processes of either some portion of the effluent or the sludge.

*The Cost, and How it is Met.*

The capital outlay on the system over the period 1856 to March 31, 1914, amounted to about £12,500,000, of which approximately one-half has been repaid. The net expenditure for maintenance for the year 1913-14 was £303,402, towards which out-county areas contributed £28,467. The rate charges for main drainage services (capital and maintenance charges) in the county area amounted to 3.355d. In addition to this, Londoners pay the local drainage rate, which, roughly speaking, is 1d. in the £ averaged over all the borough council areas.

[The civic courage displayed in spending twelve millions and a half on drainage should be of good augury for the solution of London's traffic problem.]

\*Abstract of a paper read at a meeting of the Institution of Civil Engineers.



## NEWS ITEMS.

*Postal Addresses.*

The Postmaster-General, having introduced a new system of address, under which a number placed after the district initials will indicate the proper office of delivery, has prepared a small book, obtainable free of charge, showing the proper district initials and number for each of the principal streets of London. The address of this journal, for example, is 27-29, Tothill Street, Westminster, S.W.1.

*£12,000 Housing Scheme for Sedgley.*

Sedgley District Council have prepared a scheme, to be carried out after the War, for the provision of fifty houses for the working classes, at an approximate cost of £12,000. The proposal has been submitted to the Local Government Board, and the Council have received a reply suggesting that provisional plans and estimates be prepared in order that immediately the existing restrictions on building operations were removed the work could be put in hand.

*Eton War Memorial.*

More than £82,000 has been subscribed for Eton war memorials, and, by a resolution passed at a meeting of Old Etonians under the presidency of Lord Rosebery, it was decided to provide for a permanent and visible record at Eton of those who have fallen. With reference to this point his Lordship said that it was a delicate subject. But he suggested that they might select one of the most striking memorials of resplendent figures of those who had fallen during the war, and fix a tablet in each class-room as an incentive to the boys, and set a glorious example before them. They might also erect a monument similar to Eleanor's cross in front of Charing Cross Station, for which a site could easily be found.

*Income Tax Claims.*

Mr. Wilfred T. Fry, director of the Income Tax Reclamation Association, Ltd., 62 and 63, Queen Street, London, E.C., writes: "Permit me to remind your readers that any claim in respect of the financial year 1913-14 must be lodged with the Inland Revenue before April 6 next. Claims can be made in respect of the following: Exemption, where total income does not exceed £160. Abatement, where total income does not exceed £700. Children's allowance, where total income does not exceed £500; also for bank interest, life insurance premiums, maintenance of property, income of charitable institutions, etc. Any claim for the year 1915-16 in respect of a loss in business or a diminution of profits owing to the War should be preferred without delay."

*Building Trades Advisers to the Labour Ministry.*

The Minister of Labour has appointed the following to be a committee to advise and assist the Employment Department of the Ministry upon matters affecting workmen in the building trades in connection with the working of employment exchanges:—Messrs. J. Batchelor (Operative Bricklayers), J. Bradshaw (Operative Stonemasons), F. Chandler (Amalgamated Carpenters and Joiners), J. H. Edmiston (Operative Plumbers), Charles Ince (Labourers), J. Kinniburgh (Electricians), T. H. Otley (Operative Plasterers), J. Parsonage (Amalgamated Painters), J. Vickers (Heating Engineers), W. Wentworth (Woodcutting Machinists), A. Wilson (Operative Slaters). The

Minister proposes in due course to take steps with a view to forming a corresponding committee of employers' representatives in the building trades, and also with a view to forming similar committees in other trades.

*Manchester Society of Architects.*

Copy of the resolution passed at the special meeting of the Council of the Manchester Society of Architects held Friday, March 2, 1917:

"The Council of the Manchester Society of Architects learns with profound regret that a Committee of the Corporation proposes to utilise the 'Old Infirmary Site' as a tramway centre.

"It enters a strong protest against the scheme for making a tramway centre and erecting buildings on it in the manner set forth on the plan published in the report of the Special Committee on the Passenger Transportation Problem, and presses for a further consideration of the whole matter with a view to carrying out the scheme for which the Infirmary Site was specially purchased."

[For editorial comment, see p. 127.]

*Proposed New Art Gallery for Hull.*

At a meeting of the Hull Corporation Property Committee, Alderman Sir Alfred Gelder, M.P., presiding, the Town Clerk (Mr. H. A. Learoyd) explained the trust deed relating to the Art Gallery which the Right Hon. T. R. Ferens, M.P., is presenting to the city. Under this deed £35,000 in Reckitt and Sons' shares constitutes the trust fund, and the Corporation undertake to erect and complete an Art Gallery, partly upon the site now occupied by St. John's Church and partly upon other land belonging to the Corporation, within five years after the declaration of peace. Plans are to be advertised for and submitted to a committee appointed by the Corporation and the grantor. There is a condition that the Corporation shall, at their own expense, and before the completion of the building, pull down and remove the public lavatories in the City Square, "and will not re-erect the same or any other, except underground" and at a certain distance from the new gallery. It was resolved to approve the deed.

## PRUDENTIAL ASSURANCE CO.

In our advertisement pages a summary is given of the report presented by the directors of the Prudential Assurance Co., Ltd., at the sixty-eighth annual meeting, which was held on March 1. There is no need to reproduce the details here, but special attention may be drawn to the magnitude of the company's operations (its total assets amounting to £99,123,746), to its progressive prosperity, to the fact that during the year the company has lent or sold to the Treasury under the various mobilisation schemes securities of a nominal value of nearly seven millions, and to the patriotic action of its outdoor staff in providing, by voluntary subscriptions, two fully equipped motor ambulances and a balance of cash for upkeep of cars, which have been in constant use by the London Ambulance Column of the Red Cross Society, which column is largely staffed by Prudential men. It will be noted, therefore, that in subscribing to institutions such as the Prudential, the public are not merely helping themselves, but are also rendering, both directly and indirectly, services that are of enormous value to the State.

## ROYAL ACADEMY EXHIBITION REGULATIONS.

The following data are extracted from the official "Notice to Artists, 1917":

Exhibition opens ..... May 7.  
" closes ... August 11.

All entries must be punctually sent in on one of the days fixed for their reception. These days are as follows:

Water-colours, Pastels, Miniatures, Black-and-white Drawings, Engravings, Architectural Drawings and Photographs of Buildings and Architectural Sculpture ..... Friday, March 30.

Oil Paintings ..... Saturday.

March 31, and Monday, April 2.

Sculpture ..... Tuesday, April 3.

Hours for reception of works (which must be delivered at the Burlington Gardens entrance) ..... 7 a.m. to 10 p.m.

Photographs of Architectural Work, which are this year admitted for the first time, must be not less than 12 in. by 8 in., and should be framed in slight wood frames, with or without mounts, which may be tinted. More than one photograph of the same building may be included in one frame. The buildings shown must have been erected within the last ten years.

Photographs of Architectural Sculpture will be admitted under similar conditions.

Works sent from the country or from abroad must be consigned to an agent in London for delivery at the Academy, unpacked, on one of the appointed days. No works in cases will be received. Present difficulties of transit should be taken into account.

All works sent by each artist must be entered on a printed form, signed by the artist, who must give his Christian and surname in full, his address, titles and descriptions of the works as they are to be inserted in the catalogue, and price, if it is desired to place them on sale. These forms must be sent under cover addressed to "The Secretary." Name and address of artist, title and description of picture, and number (if there be more than one) to which it refers in his or her list. This information must be repeated with great distinctness and accuracy on a label securely attached by a string to the top of each frame (or to each piece of sculpture), and made to hang over in front. Applications for forms (which can be procured from the Academy during the month of March only) must be accompanied by a stamped and addressed envelope.

No artist is allowed to send or exhibit more than three different works.

All pictures and drawings must be in gilt frames. Oil pictures must not be sent in under glass, but any that, not being more than 30 sq. ft. super., obtains a place on the line, may have a glass put over it on an appointed day before the opening of the exhibition. Excessive breadth in frames or margins should be avoided. Frames of Engravings and Black-and-white Drawings must not exceed 1 in. in breadth. Oval frames should be avoided. Reliefs should be framed.

Works which have been already publicly exhibited in London, or which have not been executed within the preceding ten years, will not be admitted.

Other prohibitions, together with regulations as to the sale of works, their return to the owners, and other particulars, are contained in the official "Notice," for which intending exhibitors should make application to the Secretary.





## WAR BUILDINGS SECTION

### CHURCH ARMY HUTS.

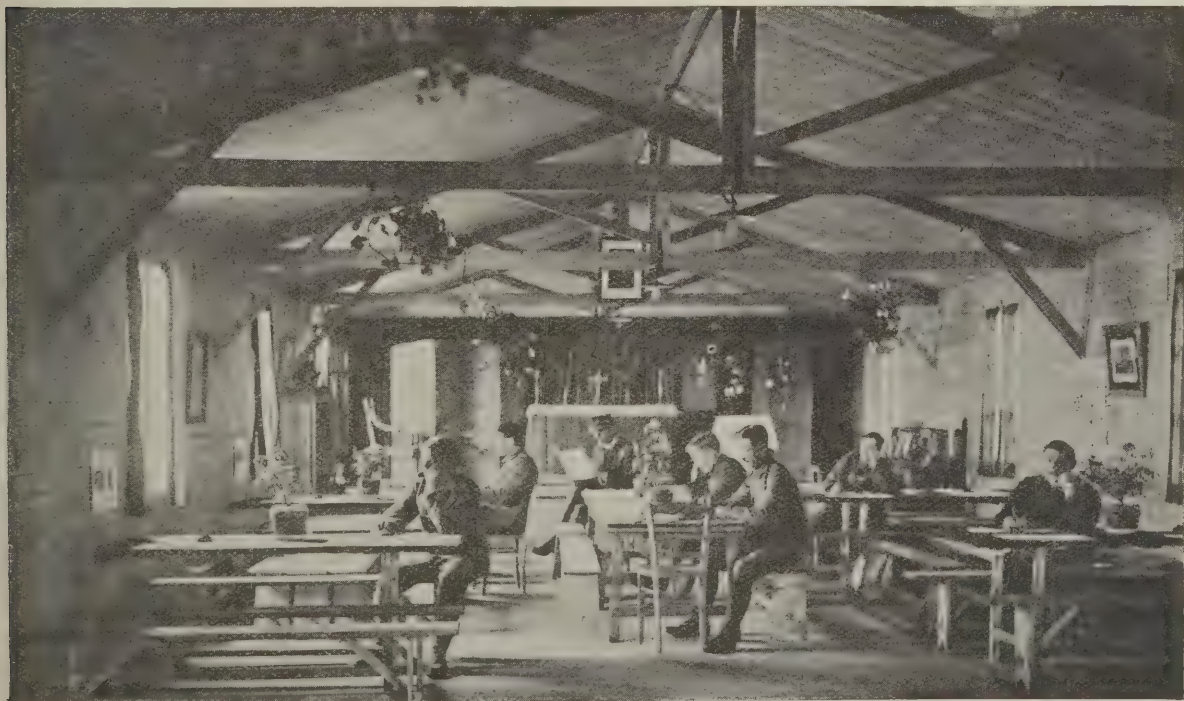
SINCE the outbreak of war a remarkable development has taken place in the movement which concerns itself with the national welfare of our naval and military. Indeed, it may be said that the provision of canteens and recreation huts has now become a vital and indispensable part of war organisation. The work has been enthusiastically taken up by the Church Army and the Y.M.C.A., to whom our nation owes a considerable debt of gratitude.

In the present article it is proposed to

give some account of the huts which have been built by the Church Army; and in a later issue we hope to deal similarly with the work of the Y.M.C.A.

The Church Army has been at work among the men of the Army and Navy for a period of more than twenty years, providing recreation tents in the summer and missions in all naval and military barracks in the winter. The scale of the work has, of course, increased enormously since the outbreak of war. To-day the Church Army is working huts in all the large

naval and military camps throughout the United Kingdom, and there are over 200 centres in France, more than 100 of which are in the shell area—the remainder being at various bases and rest camps. Even at the present moment the work is undergoing a very great extension, the Church Army having been called upon to provide an additional 140 huts on the Western Front. Seventy of these, we understand, are already in course of erection. The Church Army has also sixty centres in Egypt, twelve in Malta, a number in



A CHURCH ARMY HUT IN FRANCE: VIEW LOOKING TOWARDS "CHANCEL."

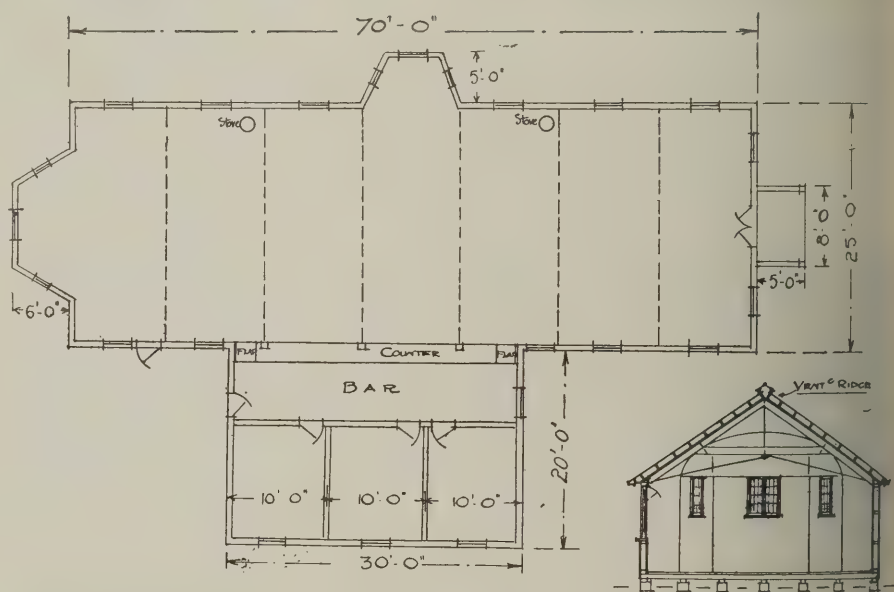


India, British East Africa, Mesopotamia, Serbia, Salonika, and several at remote naval bases in the North Sea and other bases of the Grand Fleet.

With these few preliminary remarks we may come to a general consideration of the types of huts that have been adopted. Roughly speaking, there are two—the “rest hut” pure and simple (such as the “Lord Kitchener Hut” illustrated on this page) and the hut which provides specifically for the spiritual as well as the material welfare of the men. The general requirements are virtually the same in both cases. It is essential, first of all, that there should be adequate provision for the feeding of a large number of men, and this condition necessarily implies, in addition to ample seating accommodation, a wide counter and refreshment bar, and space for the proper storage of goods. Provision must also be made for the serving staff, and rooms for their use, together with a kitchen, are invariably placed in the rear of the refreshment counter. In the combination hut—that is to say, the hut which is also definitely used for religious services—it is customary to provide at the opposite end a small chancel, which can be shut off from view by a folding screen as occasion requires. On both sides there is usually a small room communicating by a door with the chancel itself. These rooms are used as a vestry and for quiet conversation. During Divine Service it is, of course, necessary to shut off the secular part of the hut, and this is done by means of a large movable screen, which is provided with a door at either end, and runs the whole width of the hut.

Coming to constructional considerations, it should first be stated that all the Church Army huts are built up in standard parts, the working unit being the 10 ft. bay. Thus all huts are portable and may be taken down and refixed again on another site. This, indeed, has been done in several instances already, though it has been found desirable to avoid too frequent recourse to this practice because of the extra wear and tear that are necessarily entailed.

In the particular case of the “Lord Kitchener Hut” the building is timber-framed and constructed so far as practicable



A “REST HUT” IN LONDON.



A CHURCH ARMY HUT IN FRANCE: VIEW LOOKING TOWARDS CANTEN.



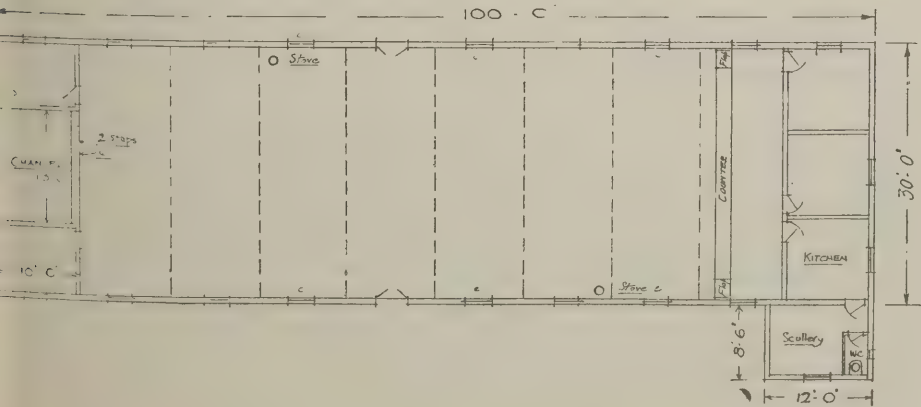
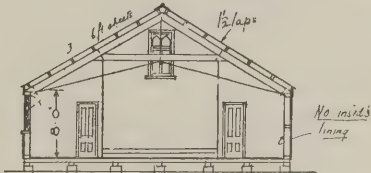
in panels 10 ft. wide by 9 ft. high. floor, of pitch pine, is also made in sls, which, however, are irregular. building is covered outside with in. asbestos sheeting laid on direct the framing; a half-timber effect, ed with Solignum, being added. It is l inside with tongued and grooved hboarding  $\frac{5}{8}$  in. thick. There is no inter-filling, though it was proposed of all to employ brick-nogging; but idea was ultimately rejected on the e of expense. The roof-truss emed is of plain and simple design, con- g of 9 in. by 3 in. rafters and collar and strengthened by  $\frac{3}{4}$  in. tie-rods. purlins are 4 in. by 2 in. Floor joists are 4 in. by 2 in., erected on light k piers, the sleeper-plates on the piers g 4 in. by 4 in. creosoted. Inside, the ling is treated with dark stain up to dado line, and with Hall's distemper e. The roof is covered with Canadian iron, lined inside with matchboarding 2 in. thick, are made to open as ements at the bottom and as hoppers ne top. In this instance, lead lights used. Ventilation is assisted by a d ventilating ridge. The outside doors are 2 in. thick, framed ledged, while the inside doors are n. thick, four-panelled. Heating is plied by slow combustion stoves, as- os sheeting and protection plates being

fitted to ensure against any danger from fire. The building is provided in front with an open porch 8 ft. by 5 ft. The large bay which occupies one end of the hut was designed to accommodate a portable platform. The counter is formed with a bar on the left-hand side of the hut, the kitchen and staff rooms being to the rear, and occupying a projecting wing by themselves, separate access being obtained to them from the outside. The absence of sanitary arrangements is due to the regulations laid down by the Royal Parks authorities. The building is equipped with collapsible tables, forms, and chairs, the contractors for the whole work having been Messrs. John Harrison and Son, of Camberwell, London, S.E. The cost of this particular hut was roughly about £550, exclusive of furniture. The foregoing constructional particulars relate generally to the other huts here illustrated; the only difference between the two types being one of design. These other huts are more representative of the type which has been most adopted, though certain variations in size and general treatment are to be noted. When, for instance, it is not desired to use asbestos sheeting, weather-boarding treated with Solignum is employed. The average cost of a typical hut is £300, another £100 being accounted for in equipment. It will be understood that, with the great

and constant additions to our armies, the need for more recreation huts is correspondingly increased. To the soldier the Church Army or Y.M.C.A. hut is more of a boon than the civilian may perhaps imagine. It is his restaurant, his reading and writing room, his church, and his concert hall combined. Therefore we have very much pleasure in recommending the good work which is being carried on by the Church Army. Those who desire to help may send their cheques, crossed "Barclays' a/c., Church Army," payable to Prebendary Carlile, D.D., Hon. Chief Secretary, Headquarters, Bryanston Street, Marble Arch, London, W.

*Price Lists in Four Languages.*

Messrs. Ashwell and Nesbit, Ltd., of Leicester, have provided a notable instance of business acumen and enterprise in printing in four languages—English, French, Spanish, and Portuguese—their price lists and discount sheets relating to the "Runwell" semi-rotary pump. Before the War such pumps were obtained from Germany. Messrs. Ashwell and Nesbit have considerably increased their plant with a view to the capture of German trade, and many thousands of pumps are now on order for the Government, Allied Governments, and our own dependencies.



A CHURCH ARMY HUT  
IN ENGLAND.

Timber Frame Construction  
covered with Weatherboarding.



## EXPLOSIVES FROM WASTE AT SEWAGE WORKS.

*Special interest attaches to this article in view of Mr. Forster's statement in the House of Commons on Thursday, March 1, to the effect that the War Office is now taking careful measures for the recovery of glycerine from Army waste. He said that broken meal and other table refuse, which was generally thrown into the swill tub and sold for a relatively small sum, or buried or burnt, was now carefully collected and sorted. All the fats were collected and sold to soapmakers, who extracted the crude glycerine required for the making of propellant explosives. Special plants had been erected, one in this country and one in France. The results were so satisfactory that others would shortly be erected. Mr. Forster said the importance of this development would be realised when it was stated that the fat contained 10 per cent. of fine glycerine, and that 1,000 tons of refined glycerine, which was the present rate of the annual output from the food of the troops, provided propellant charges for approximately 12,500,000 18-pounder shells. They sold this to the Ministry of Munitions at £50 per ton, whereas if they bought it in the United States they would have to pay £240 per ton.*

DR. S. RIDEAL, F.I.C., F.C.S., the well-known authority on all matters relating to sewage purification, has read a paper before the Association of Managers of Sewage Disposal Works, in which he makes many suggestions as to how material for the production of explosives could be obtained from the waste products of sewage works. The possibility of such production has apparently long been recognised. So far back as the time of Lavoisier (1743-1794) gunpowder was made in Paris from the nitrates of excrementitious origin. To-day the principal attention is directed to the recovery of fats from sewage. Dr. Rideal says:—

*Glycerine from Fats.*

A good deal of the unconsumed fat finds its way to the refuse destructor instead of the sewage farm, but I know of one or two military camps where the recovered fat from the detritus tanks and sedimentation tanks is now usefully collected and refined for glycerine recovery.

On the other hand, cases have recently occurred in which millions of rotten eggs, the yolk of which contains 50 per cent. of fat, have been forced into the sewers, and hundreds of cases of bully beef, containing 1 oz. or 2 oz. of fat per tin, have either been buried or consigned to the incinerator and thus wasted.

In the ninth report of the Royal Commission on Sewage Disposal (Vol. II., p. 160) some figures for the grease in sludge are given, and these show that from pressed dry sludge as much as 8 per cent. of fat can be extracted by a suitable solvent. The lowest figure is 3.51 per cent., and an average figure for peace-time sludge may be 5 per cent.

The quantity of solids in sludge is best calculated on the population rather than the volume of sewage, as this eliminates the differences in the volume per head of different cities. Medcalf and Eddy show that this figure for chemical sludge (which, of course, is higher than that from septic or sedimentation tanks) may be taken at about 224 lbs., or 2 cwt. per 1,000 population, and we thus get on 5 per cent. of fat units 100 cwts. of fat per 1,000,000 population.

At the present time we might assume that camp sewage is richer in fat than that of towns, but, taking them as equal, the total may be roughly estimated at 400 cwts. daily from camps and 4,000 cwts. from the rest of the population. This quantity of grease is not necessarily all glycerine, but there is no doubt that, along with unsaponifiable oils, there is a fair amount of animal and vegetable fat which would give glycerine if properly hydrolysed. I think, however, that one cannot calculate on more than 20 per cent. being saponifiable, and this, with 10 per cent. of glycerine recovery, gives only 8 cwts. of service glycerine, as against 80 cwts. obtainable daily from all the civil sewage.

Bradford and Oldham have shown the way for systematic fat collection from their

exceptional sewages for many years. At Bradford, before the War, the fat recovered was from twelve to fifteen tons per day, and was valued at £8 to £10 per ton, and the cake, after hot pressing to recover this fat, was still of some commercial value.

In Dresden, the year before the War, the sludge was being separated from the sewage mechanically, and after partial drying it contained 13.35 per cent. fat, which was extracted by ethylene trichloride solvent. Before the War a plant at Cassel for extracting the fat by benzene after acidification was abandoned.

I conclude, however, this part of my subject with the thought that our fat supplies are not exhausted, and that this reserve is not likely to be required.

*Wasted Gases.*

Many of us remember the explosions which took place in some of the closed septic tanks in the early days when they were of no military importance. These gases are derived from the anaerobic decomposition of the organic matter in the sludge, and have hitherto hardly been utilised. They consist largely of methane, and may be 2 or 3 per cent. of the volume of the sewage from which they are derived.

Cavel, in 1912, in Paris, studied the formation of gas from the sludge. He mixed the dried sludge with 20 per cent. of coke and obtained 81.7 cubic metres of producer gas having 3,500 calories per cubic metre. In his experiments he used the gas so formed for drying fresh portions of the sludge, and calculated that from Paris and the Seine Department 300 tons of dry sludge could be obtained per day, giving 24,500 cubic metres of gas, worth 447,000 francs per annum.

To utilise these gases for war material the Hensler engine seems best adapted for further study. In it the explosion takes place in excess of air, and the oxides of nitrogen formed, as in an arc lamp, are rapidly removed to a cooling chamber to prevent their decomposition.

When absorbed in a water tower, weak nitrogen acids are produced without the employment of sulphuric acid, and thus a direct fixation of atmospheric nitrogen to nitric acid could be effected by the waste gases from our sewage works. I will not venture, from the data I have given you, to make a calculation, as in the case of glycerine, of the metric tons of nitrate that could be obtained in this way, as, fortunately, in this country at any rate, fuel for gas producers will outlast this War, but in a beleaguered city such a device might be turned to advantage.

*Sewage Nitrogen.*

I must now turn to the most important part of my subject, namely, the conversion of sewage nitrogen into available nitric acid.

The utilisation of sewage nitrogen is no new problem. Sir William Crookes, many years ago, said: "We have the startling

fact that in the United Kingdom we are content to hurry down our drains fixed nitrogen to the amount of no less than £16,000,000 per annum. This unspeakable waste continues, and no effective and universal method is yet contrived of converting sewage into coin." At the time of this calculation nitrate of soda was worth £7 10s. per ton, so that nitrogen even then was more than £50 per ton.

One hundred thousand persons produce on the average 90 grms. per person per day of faeces and 1,170 grms. of urine, equivalent to 3,300 tons per annum of solids and 43,000 tons of urine. The nitrogen in faeces is 1 per cent., in the urine .60 per cent. We have therefore 33 tons of organic nitrogen in the solid faeces and 258 tons in the urine.

Our military camps could furnish 11,640 tons per annum and the civil population 116,400 tons if all the nitrogen could be converted.

It is, of course, a war secret how much nitric nitrogen is required by the belligerents per annum, but we know that the Chili exports have now all been diverted from Germany, and that in the past we have relied on this source, while the Central Powers have had to improvise their raw material.

The Badische Anilin and Soda Fabrik have published their output of sulphate of ammonia by their Haber process of synthetic production from atmospheric nitrogen as equal to 300,000 tons, which is equivalent to 62,000 tons of nitrogen per annum.

This synthetic sulphate of ammonia in Germany is now being converted into nitric acid by the Ostwald process to replace the Chili nitre which the Allies have commandeered. My figures show that in sewage we have twice as much nitrogen available, but not yet utilised, already in combination, either as ammonia or in organic form.

*Recovery of Ammonia.*

How can this ammonia be removed from our sewage? I suggest two simple methods—(1) By heat; (2) by air.

(1) It is common knowledge that heat exchangers can be now designed to work with a very small loss of energy, and that the removal of the free ammonia from a tank effluent is therefore not an impossible task. The addition of lime to ensure the freeing of any ammonia salt may be necessary, and the effluent, after being "de-ammoniated," could be further purified by filtration or land treatment.

(2) Sewage treatment by aeration and activation is now one of the recognised methods, and has been tried in many places in this country and America. The colloidal and suspended matters form a sludge which is especially rich in nitrogen, and the effluent contains nitrates before filtration. It would seem that the air treatment thus brings about a rapid evolution of carbonic acid and nitrification, so that the escaping gases will not, under ordinary



conditions, contain any ammonia. When, however, air is aspirated through an ordinary sewage, the ammonia is removed by the air, and I suggest that if the "activation" be carried out in presence of lime, nitrification will not be so complete and some of the ammonia will be present in the escaping gases.

#### *Nitrates from Effluents.*

My last suggestion deals with the recovery of nitrates from effluents.

In 1898 I made my first analysis of a camp effluent—that from the Caterham Barracks. We then had a raw sewage with 17.2 parts of total nitrogen, and after a very efficient filter had been installed I found more than 50 per cent.—viz., 9 parts of nitric nitrogen—in the effluent. There were still 5 parts of unoxidised ammonia, and this could easily be oxidised, making 14 parts of nitric nitrogen, or 14 lbs. per 10,000 gallons, equivalent to 85 lbs. of nitrate of soda per 10,000 gallons.

The natural concentration of sodium nitrate solutions in Chili might give us suggestions for the evaporation of this large volume of water. A filter-bed with no effluent drain protected from rainfall, if irrigated with such an effluent, would gradually concentrate the nitrate, and thus provide a valuable product from waste.

#### WAR DAMAGE TO VENICE.

Venice has been attacked from the air twenty-one times since the outbreak of the war. The first bombardment (writes Mr. Horatio Brown in "The Times," in a communication dating from Venice) took place on May 24, 1915, the day war was declared. All the attacks have been car-

ried out by aeroplanes. In 1915 there were eight, last year thirteen. These attacks were made either by daylight or when the moon clearly defined the position of the city on its lagoon and canals. There has been a *crescendo* in the ferocity of the attack and in the size of the bombs. It seems that some attempt has been made to aim at specific points—the arsenal, the station, the cotton mill—except during the violent assault which followed the fall of Gorizia, when bombs were sprinkled freely all over the town; but, in any case, the height at which the aeroplanes fly makes the incidence of the bombs a matter largely of chance.

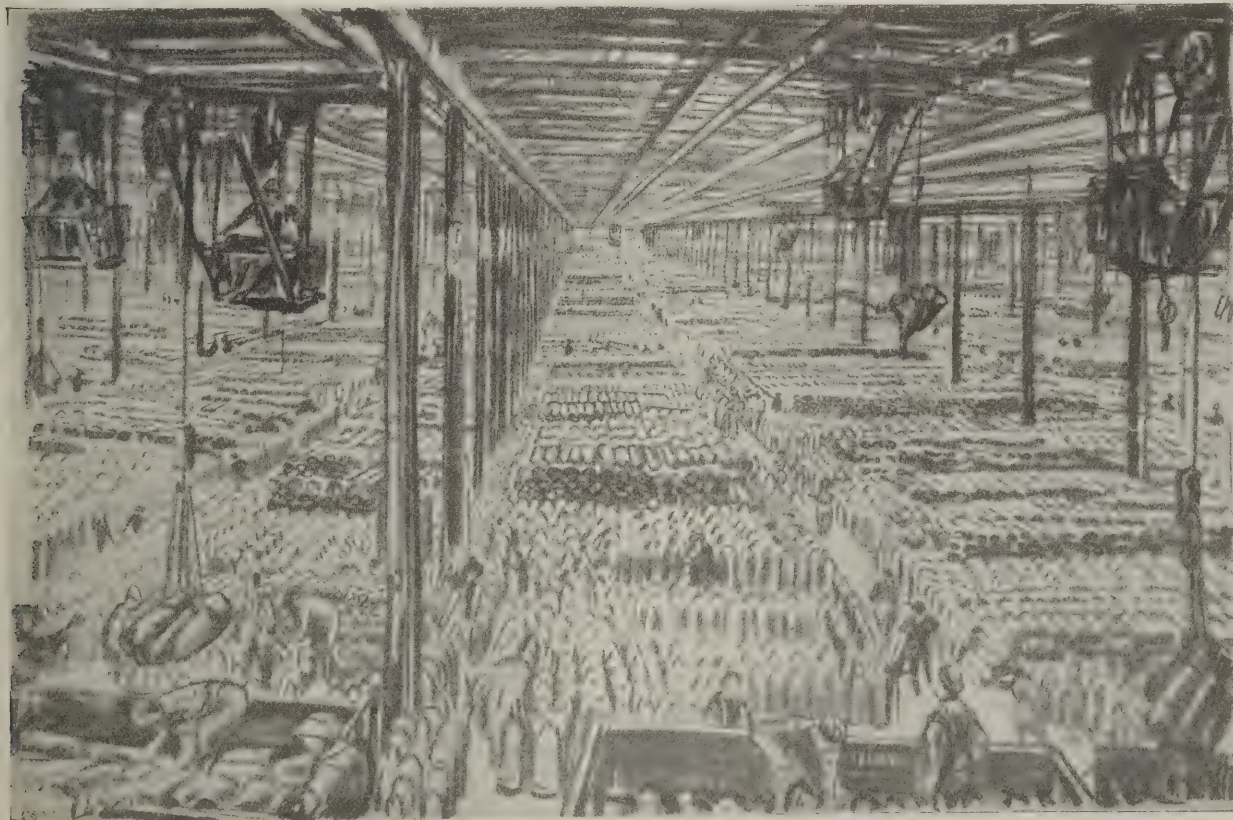
As to the actual damage done to the city, it is surprising that there has been so little when we remember the frequency and viciousness of the attacks. Many of the bombs fell in the water and were comparatively harmless; but neither the Venetians nor their enemies can tell what precious monument may not be sacrificed in some future raid. Curiously enough, the most conspicuous buildings damaged so far have been churches; some private houses have been wrecked, but none of the monumental palaces. The raid of October 20, 1915, which took place at 10.30 p.m., demolished the roof of the Scalzi Church, near the railway station, with the ceiling by Tiepolo, representing the Translation of the Holy House; the pavement and the marble decorations also suffered severely. Though the fresco was not one of Tiepolo's finest works, it can never be replaced, and, on the whole, the damage to the Scalzi is the most serious artistic injury that Venice has so far received.

Our Italian Allies may be trusted to do their utmost to put an end to this barbarous and senseless destruction of art treasures.

#### "THE HALL OF THE MILLION SHELLS."

In Part III. of "The Western Front" are included some drawings of munitions works in this country, Mr. Muirhead Bone having been granted facilities for this purpose; other drawings of the same kind will appear in later issues. By kind permission, we are able to reproduce Mr. Bone's drawing of "The Hall of the Million Shells." This shows the interior of one of the many large buildings which have been erected in different parts of the country for the storage of shells "in bond," and though it is not at the present time permissible for us to give any specific description or illustrations of these buildings, Mr. Bone's drawing serves to indicate the vast scale on which they are designed and the wonder of their contents. The following note accompanies the drawing: "A store containing loaded shells of every calibre. All the plant has been made since 1914, in answer to the challenge of German militarism. The railway trucks in the foreground are incessantly filled and refilled from the supplies pouring into the store for dispatch to the Front. Women drive the cranes that gather up bunches of shells from any part of the building and lower them, with absolute precision, to their appointed places in the trucks. All handling of shells must be cautious and deliberate, but the work proceeds, without haste and without rest, at a remarkable speed."

"The Western Front" is published in monthly parts, price 2s. net, and is issued for the Government from the offices of "Country Life," 23, Tavistock Street, Covent Garden, W.C. It is in every respect a valuable pictorial record of the war activities of the Allies.



"THE HALL OF THE MILLION SHELLS."

From a drawing by Muirhead Bone in "The Western Front."



## PUBLISHER'S ANNOUNCEMENT.

THE question of the cost of Advertising is governed entirely by the circulation of a publication. The prices for small Advertisements enumerated below are framed upon the lowest possible basis in order to allow the use of the columns of the Journal for "Wants," &c., at a figure well within the reach of everyone.

Advertisers are purchasing the circulation of a paper in buying space for their announcements, and we are able to announce that "The Weekly Nett Sale of The Architects' and Builders' Journal is larger than that of any other Architectural Journal."

### Appointments Wanted.

4 lines (about 28 words) 1s. 6d.; 3 insertions, 3s.

**ADVERTISER** is open to submit Estimates, Carpenter's work; just completing large aero sheds: good G.F.—A., 30, Albert Road, Walthamstow.

**BRICKWORK** and Pointing Wanted, by rod or lump, old or new; good references.—S., 145, Amyand Park Road, Twickenham, S.W.

**BRICKWORK**, pointing, tiling, slating, slabbing, and plastering, by piece or job; dilapidations and repairs to all property a speciality.—T. H., 210, Drakefell Road, Brockley, S.E.

**BUILDER'S**, Contractor's, Decorator's Clerk (thoroughly experienced) desires re-engagement; town or country; eligible for employment under new age regulations; accounts, jobbing and day work; ledgers, cash, wages, and prime costs.—J. E., 82, Park Street, Camden Town, N.W.1.

**BUILDER'S** General Foreman disengaged; good practical experience in all trades and in the management of men; twenty-five years' good references; London or country.—A. C., 125, High Road, Chiswick, W.

**MACHINIST** wants Job; all-round hand, four-cutter, tenoning, spindle; sharp saws, make cutters; charge gas engine; age 35; ineligible for Army.—G. Phillips, 129, Manor Place, Waltham, S.E.

**PAINTER** (steady) wants work as leading hand; used to public, private, and estate work (in or outside); has a knowledge of other branches.—J. Wicks, 102, Coldharbour Lane, Camberwell, S.E.

**PAPERHANGING** (any description) (piecework); high reliefs, anaglyptas, lincrustas, soirettes, tekko, emdeca, canvas, and all latest productions; artistic panelling and special designs; town and country.—Logan, 185, Loughborough Road, Brixton.

**PLUMBER** (registered; gas, hot water) wants job; well up in the latest sanitary work; alterations or jobbing; age 43.—Plumber, 16, Heathfield North, Twickenham, Middlesex.

**PLUMBER** (experienced), sanitary and lead laying.—Address Plumber, 34, Station Road, Shepherd's Bush, W.

**SHOP** Foreman of Joiners (working) wants re-engagement; large experience in all kinds of joinery, stairs, bank and office fittings; thoroughly understands management and working of machinery, preparing working drawings, details, etc.; references; age 46.—A. B., 4, Landcroft Road, East Dulwich, S.E.

**THE** Association of Builders' Foremen and Clerk of Works, 56, Old Bailey, E.C.—Experienced Foremen and Clerks of Works can be obtained by applying to the Secretary, Mr. J. W. Sawyer, 214, Clapham Road, S.W. Competent foreman and clerks of works are invited to join this Association.

**WANTED**, Brickwork, Pointing, and Cutting; good references.—J. W., 78, Smith Street, Kennington Park, London, S.E.5.

### Appointments Vacant.

6d. per line.

**BUILDER'S** Cost Clerk (ineligible) wanted; must be accurate and experienced in office routine; permanency if suitable.—Apply, stating age, experience, and salary required, to William Saint, Railway Building Works, Cambridge.

**CLERK** of Works required (ineligible) for duration of war at all events; capable man wanted on large estate thirty miles from London; one who has filled a similar post before.—Apply, with full particulars, to "J. B.," Messrs. Trollope, Land Agents, 25, Mount Street, Grosvenor Square, W.

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# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MARCH 21, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1159.

HAVING fulfilled its mission as a recruiting agency which was second to none in efficiency and effectiveness, the Architectural Association turned its attention to Red Cross work. Its Red Cross Detachment (London 43rd) is performing excellent national service, in which all who are able should very willingly engage. Architects are specially invited to confer with Mr. F. R. Yerbury, the Quartermaster (37, Great Smith Street, Westminster, S.W.1), who will put them in the way of rendering effectual personal aid to those who have fought and suffered for us. In this most humane work all are anxious to share, but very many, we are convinced, hold aloof from it in modest distrust of their qualifications for it. These are the very men who, when once they have been coaxed out of their shells, become the most effective helpers, and astonish themselves with their success in work from which they had diffidently shrunk. There is no Procrusteanism in the organisation. Those who are physically strong will be afforded opportunities of turning this advantage to good account, and in the end will find themselves all the better for the exercise; while those who are less hardy will be allotted tasks which are not beyond their strength. For there is considerable "diversity of operations," and Mr. Yerbury may be trusted not to put the round peg in the square hole. And what work could be better calculated to broaden a man's outlook, to give him, if he lack it, "a heart at leisure from itself to soothe and sympathise"? It will give him, too, the consciousness that he is "doing his bit." We trust that the sense of duty and of esprit de corps will be so strongly stirred by Mr. Yerbury's appeal as to give the A.A. Red Cross Detachment the recruits of which, we regret to see, it is badly in need. Personal service is the chief need, but those who are unable to give this may help by subscribing to the funds, with which, it is hoped, a special ambulance equipment may be purchased. Membership, however, entails no expense beyond the two pounds or so for which the very neat uniform is obtainable.

"Belgium will live again," said Baron Chazal, in a lecture delivered at Nottingham University College last week. We were unaware that it was dead, and we have full confidence in its restoration to health and prosperity. For that matter, so has Baron Chazal, who very usefully indicated some of the material means of recovery. "After the war," he said, "millions of pounds' worth of goods of all kinds would be needed to repair the devastation which had been wrought during the German occupation. The railways, factories, telegraphs, houses, had been denuded, and now that practically everything of value had been taken, they were taking the men." In Belgium alone, he said, thirty thousand houses would have to be rebuilt and re-furnished; every village ironmonger would need re-stocking; ploughs would also be required; cattle, horses, and food would come, he hoped, from Britain or British colonies, "and," he added, "it was of prime necessity for British manufacturers to study the metric system, which was now used almost all over the globe." In the current issue of "Specification" they may study the metric system and much more; for it contains a comprehensive statement of the actual requirements for the rebuilding of the devastated areas. Mr. A. G. White, general secre-

tary of the National Federation of Building Trades Employers, has been able, with the invaluable assistance of an eminent Belgian contractor, to collect most useful particulars with respect to building practice in Belgium, and to indicate quite definitely what exactly is wanted for walls and façades, floors, roof-coverings, interiors, doors and windows, pavements, and so forth, and he adds also valuable guidance on points of procedure. Such information being otherwise unobtainable, Mr. White's most useful article in "Specification" cannot be too widely made known.

As a result of the deputation of architects to Mr. Neville Chamberlain, to which reference was made in our issue of February 28, an advisory council has been formed, with the object of combining the entire profession in a united offer of national service. It is not the fault of the Institute that this important step was not taken months ago; but the collection of *dossiers* was mere waste of effort when there was no means of making use of them. A Department of National Service having been created, the effort is vitalised, and the documents collected should be of considerable value to the State, and, incidentally, to the architects who provide them. The State will be able to form a fairly definite idea of the skill and experience placed at its disposal, and the architects will have the satisfaction of making a firm offer of serving their country as they are best able, and, in all probability, of thereby avoiding, in many instances, employment giving no scope to their special qualifications. We would urge them, therefore, to take prompt and full advantage of this opportunity for effectual patriotic service.

Whether or not it will ever be possible to build ships entirely of reinforced concrete is an open question, but, short of that, the material has many useful maritime applications. One of the most important of these is mentioned by Mr. G. Basil Barham, in an article in the "Globe" of March 13. As an instance of its value in repair work, he mentions the case of the warship Goeben, which had concrete run into her hull to effect a repair that could not have been done in any other way without much greater difficulty. The use of cement as a protective coating for the steelwork of ships is, it appears, of dubious advantage. It may prevent corrosion, or, on the other hand, it may conceal it, and even produce it, because strains set up in the plating may cause inconspicuous cracks in the cement, letting water through to the metal. Possibly this very serious difficulty might be overcome by waterproofing the cement by mixing with it one of the 'special preparations which are said to render the material more elastic, and thus to prevent cracking. Experiments in this direction are therefore clearly indicated, and the extent to which the country depends upon its shipping makes it worth while to conduct them exhaustively.

It is proposed to build a memorial chapel at the north-east end of the parish church of Windermere, Sir William Forwood supplying the funds, £2,500. An application for a faculty was made at a sitting of the Carlisle Consistory Court. Having heard the evidence, Chancellor Prescott said a word in season.



Quoting the report issued in 1914 by the Archbishops' Committee on Ancient Monuments (Churches), which recommended "that an advisory body should be constituted in every diocese for the assistance of the court in architectural matters relating to churches as to which facilities are sought," the Chancellor added that "although he had had a good many years' experience of ancient churches and their history, and of church architecture in different parts of England, he did not wish to pose as an architectural expert." He therefore adjourned the case to the next court, and "in the meanwhile he would get the advice of those who were really experts in these matters, and see if his own opinion was confirmed." *O si sic omnes!* Strange that a single exhibition of common sense should have such power to draw forth one's unfeigned gratitude!

\* \* \* \*

Although the reintroduced Charing Cross Bridge Bill was read a second time on March 13, by 128 votes against 56, this result may be attributed to the exigencies of the times, and to the ready resort to compromise when contention would be highly inconvenient, rather than to an altered view of the merits of the case. Factors that really determined the issue were the apathy of the London County Council, the acquiescence of the Westminster City Council, and the intervention of the Government, which sought to placate the opponents of the Bill by persuading the railway company to insert a clause providing that if the company's interests are bought out within ten years the cost of the projected work—£167,000—shall be deducted from the purchase price. This complaisance on the part of the company had, no doubt, the moral effect designed of seeming sweetly reasonable; but the clause may be justly suspected of having no material force whatever, beyond that of enabling the company to carry their point, with the ulterior consequence of postponing reform, notwithstanding the specious plea of Mr. G. H. Roberts, as spokesman for the Government, that the execution of this work would not prejudice any future scheme for re-planning. That, however, is precisely what it will do; otherwise there would have been no particular reason for opposing the Bill. Mr. Burdett-Coutts's contribution to the discussion should find a place among the curiosities of debate. He affected to have been "rather amused" by a letter on the subject signed by Mr. John Burns, Mr. Ernest Newton, Mr. Reginald Blomfield, and Sir Aston Webb, whom he described as "representatives of artists, æsthetics [*sic*], poets, and the people who liked to think that they combined all three in themselves." This is Mid-Victorian with a vengeance! Imagine Mr. John Burns in long hair and short velveteen knickers, a sunflower in his button-hole, and a bee in his bonnet, posturing angularly to the tune of

"A most intense young man"! Mr. Burdett-Coutts conveniently but ineptly remembers his Bunthorne but jocosely forgets his Wordsworth; and he evidently appreciates the force of Newman's saying that "one cannot confute a sneer."

\* \* \* \*

It is apparent that organised architects are becoming aware of reactionary tendencies against which they must array all the forces they can command. It is an obligation they owe to their art as well as to their profession. It was a Fellow of the Institute who, a week or two ago, expressed the fear that "national necessity," or some equivalent catch-phrase, was being made the cloak for much that was amiss. Unhappily the truth of this observation is beyond question. Evidences are arising in all directions that, in particular, mean-mindedness in administration is rejoicing in many and unwonted opportunities for congenial exercise. Never before has parsimony had so wide a range and so plausible an excuse, and there is therefore all the more reason why architects should maintain constant vigilance to prevent its degrading influence and to assert the principles of that higher economy which not only makes for amenity, but is actually, as Mr. John Burns has stoutly maintained, a "good business proposition." It is a poor publicist who thinks that profit and loss can be exhaustively shown by double entry in a ledger.

## THE PLATES.

*Entrances, St. George's Hall, Liverpool.*

THE short but brilliant career of Harvey Lonsdale Elmes is one of the most surprising facts in the history of nineteenth-century architecture. The Greek Revival, which succeeded to what might be called the folio period of the Georgian Renaissance, and owed its origin mainly to Stuart and Revett's great work on Athens, was an essentially academic style demanding an exact and scholarly adherence to antique precedent, and the nearest possible approach to the ideal refinement of antique detail. Yet St. George's Hall, its culmination and masterpiece, was the outcome of an ordinary open competition; and the architect was a young man of twenty-five, in no way remarkable as a scholar or an archæologist. Elmes was then at the very beginning of his independent practice, had not once so much as crossed the Channel, and never to the end of his life set eyes on a Greek temple, or on any of the great secular works of the Roman Empire, by which his genius was so splendidly inspired. His early death was a serious loss to architecture, for he was one of the few men in recent centuries whose ideas and conceptions were on the grand scale of Imperial Rome. His genius had already freed the Greek Revival from antiquarian trammels, and might have done much to keep it alive through the triumphant period of the rival style almost up to the inevitable reaction in favour of Classicism. But fortunately, in St. George's Hall, his opportunity came to him in time; and no architect at the close of the longest and most distinguished career could desire to leave a nobler monument of his powers. When Elmes died, in 1849, leaving St. George's Hall unfinished, C. R. Cockerell was asked to continue the work. He gladly accepted the task, for he had long known and appreciated Elmes. Indeed, the two men had been close friends for some time. In working out his brilliant ideas the younger man had been constantly in touch with the elder, who gave ungrudgingly of his maturer knowledge and experience. There has been a good deal of controversy at various times as to how much of St. George's Hall is attributable to Elmes and how much to Cockerell. Briefly, these are the facts of the case: Elmes left the exterior nearly completed, and planned the general arrangement of the building and

## PAPER ECONOMY.

IN the national interest, all newspapers and journals have to do their utmost to economise paper, in furtherance of which aim some newspapers have abolished the system of "sale and return." We ourselves do not find it necessary to do this at the present time, but we would ask our readers to aid us by getting their Journal in either of two ways—(1) by placing a direct subscription for it, or (2) by making a point of getting copies regularly from the same newsagent. It is obvious that if a reader buys his Journal here this week and there next week, newsagents cannot determine the exact number of copies they may want in any single week, and the result is bound to be waste in "returns" (*i.e.*, copies returned unsold). This waste ought to be reduced to the smallest possible amount, and we therefore ask every reader to follow the suggestion mentioned above.



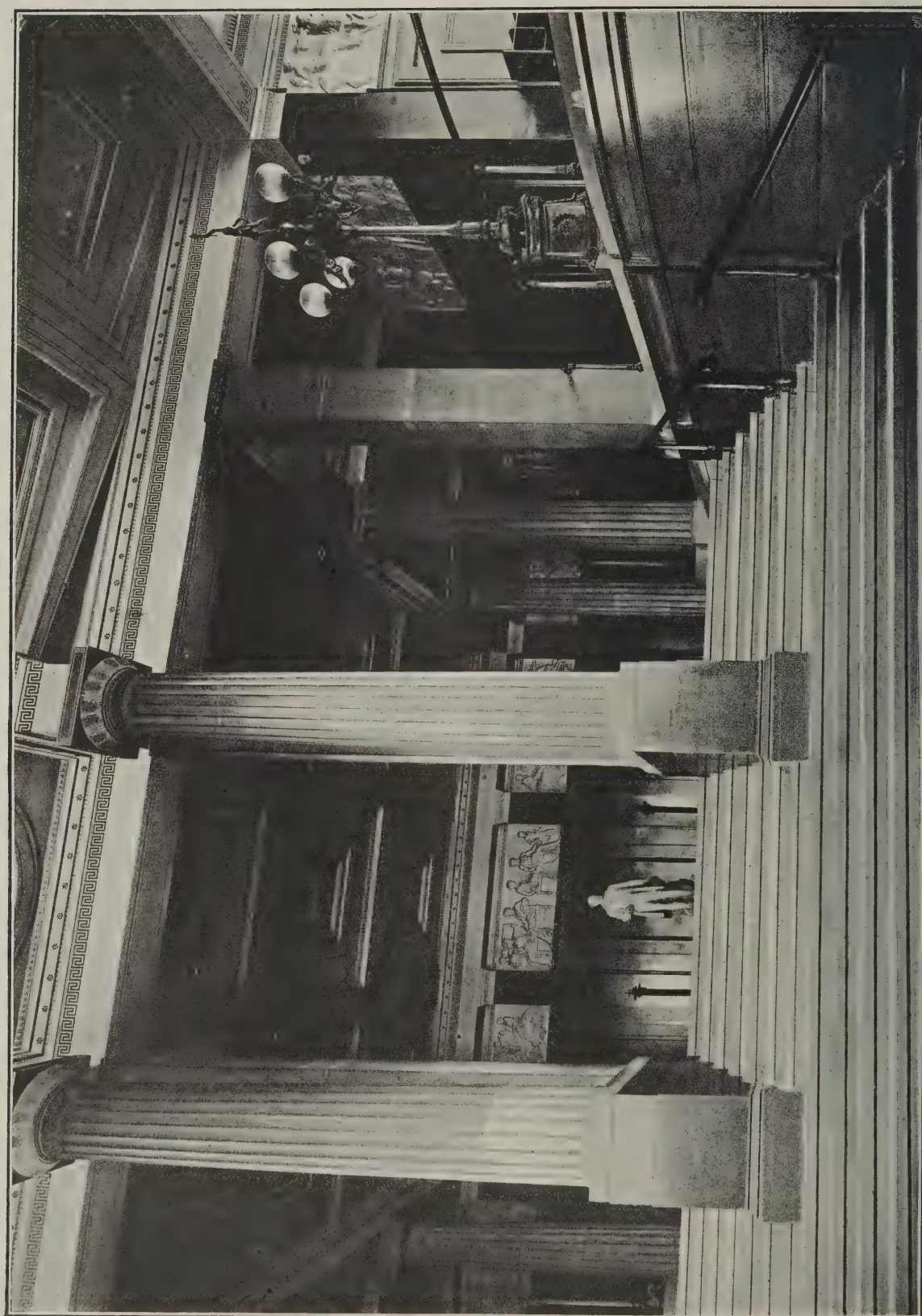
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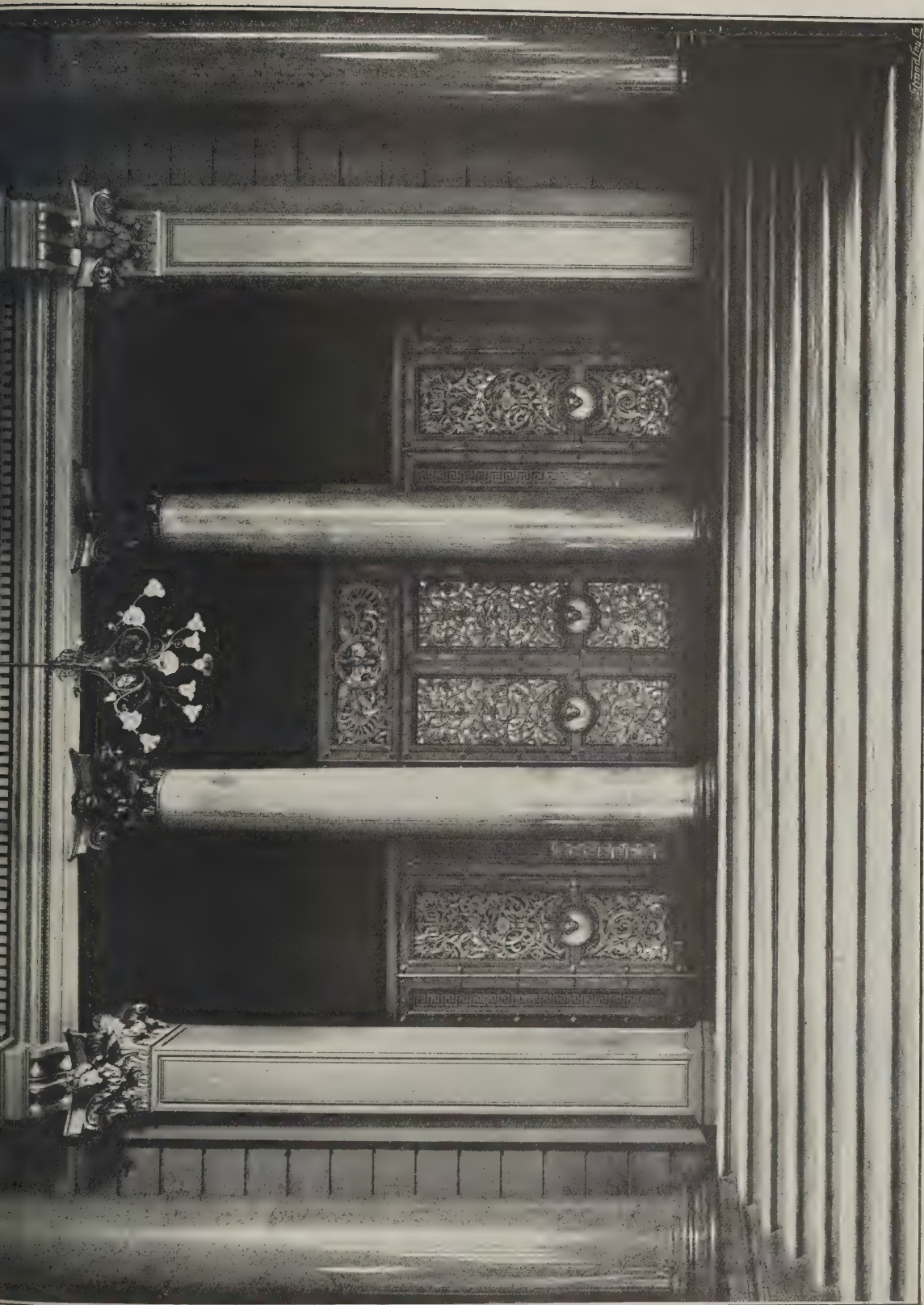
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North Hall.





Great Hall.

MONUMENTAL ARCHITECTURE (SERIES II.). X.—ENTRANCES, ST. GEORGE'S HALL, LIVERPOOL.

HARVEY LONSDALE ELMES AND C. R. COCKERELL, ARCHITECTS,

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*Photo : Francis R. Taylor.*

LONDON FAÇADES. XV.—EIGHTEENTH-CENTURY HOUSES, CHISWICK LANE, LONDON, W.







*Photo: Francis R. Taylor.*

DETAILS OF CRAFTSMANSHIP (SERIES II.). XXIV.—STAIRCASE, EAST CLIFF HOUSE, HASTINGS.

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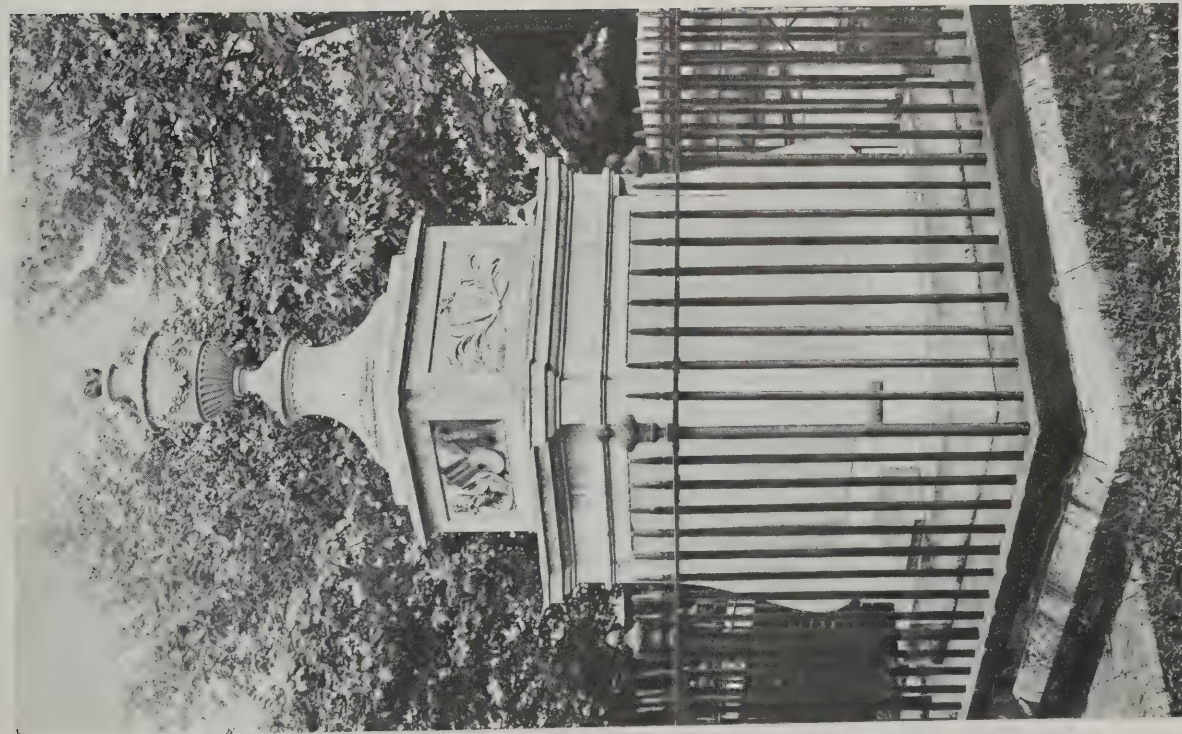


Photo. Francis R. Taylor.

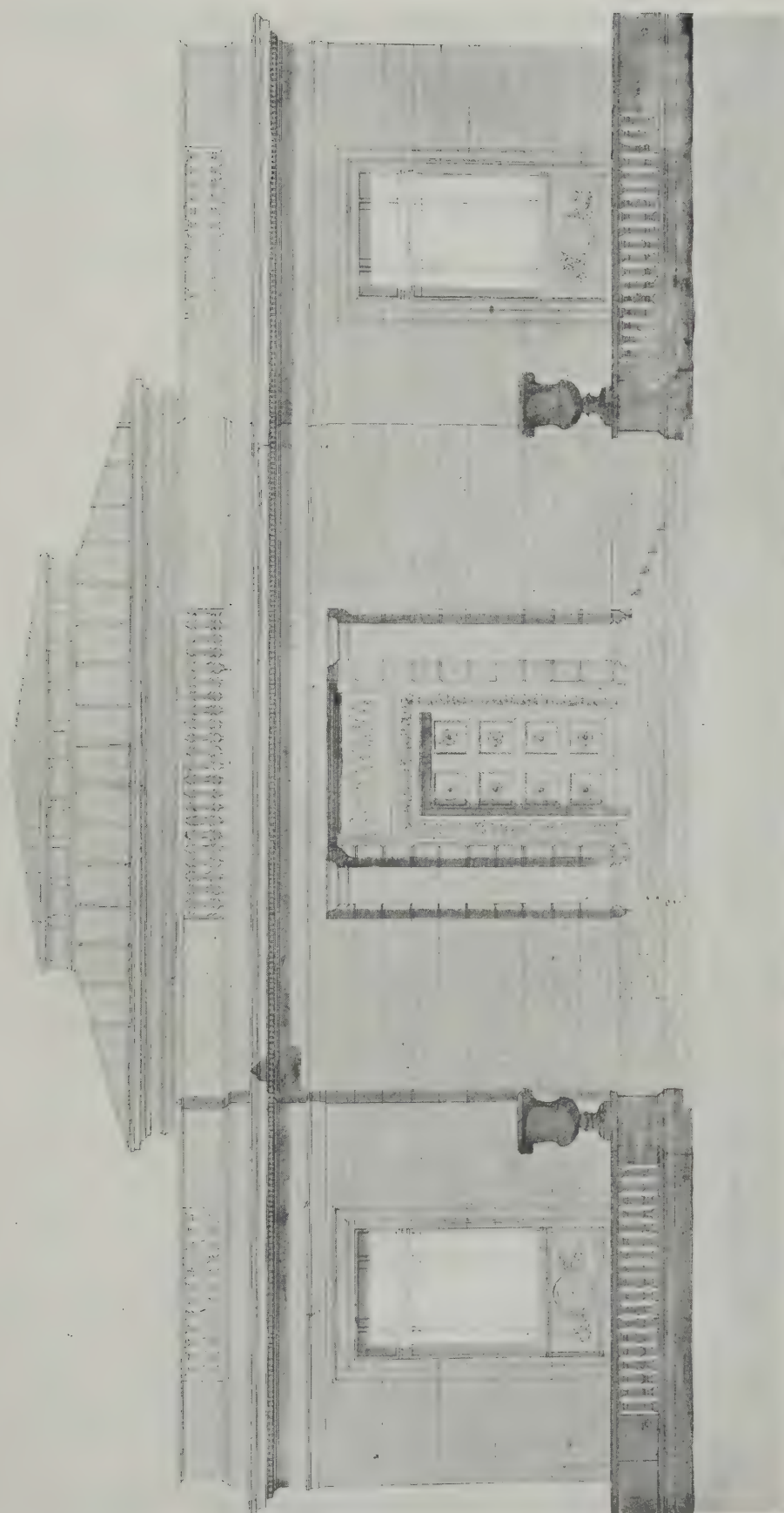
Hogarth's Tomb, Chiswick Churchyard.



Mausoleum, Pere Lachaise, Paris.

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STUDENTS' DRAWINGS (SERIES II.). XLII.—DESIGN FOR A BRANCH LIBRARY. BY FRANCISCO MUNGUIA.

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the main internal structure of the Great Hall; he also completed the fine northern entrance portico. The rest of the work is Cockerell's. The fine scale of the interior is admirably conveyed by the two views on our double-page plate, one showing Cockerell's bronze gates at the top of the stairs leading from the Great Hall to the Crown Court, and the other showing the North Hall, with its staircase approach, decorated Doric columns, and coffered ceiling treatment.

#### *Eighteenth-century Houses, Chiswick.*

Chiswick has many fine old eighteenth-century houses, both large and small, and among the latter those in Chiswick Lane, shown on our plate, claim attention by reason of the charm of their façade. These are Early Georgian houses, as one may see by the windows, which show wide frames and stout bars, and by the door hoods, which have consoles of the bold character that is typical of early eighteenth-century work. The brickwork itself is full of interest, and so, too, is the tiled mansard roof, with its flat tiles on the lower slope and pantiles above. There is a general air of warmth and geniality about these houses which is so often lacking in modern work that an example like this is well worth study.

#### *Staircase at Hastings.*

The house in which this staircase is situated was built in 1762. The woodwork is typical of the period. The stair balusters are characteristically elegant in form, and are excellent pieces of joinery. There are three to each tread. The spandrels and the string to the landing are richly carved with floral ornament, which exhibits French influence in a marked degree.

#### *Two Monuments.*

An urn on a pedestal base has been a favourite treatment in classical designs for monuments, and the tomb of William Hogarth in Chiswick Churchyard follows

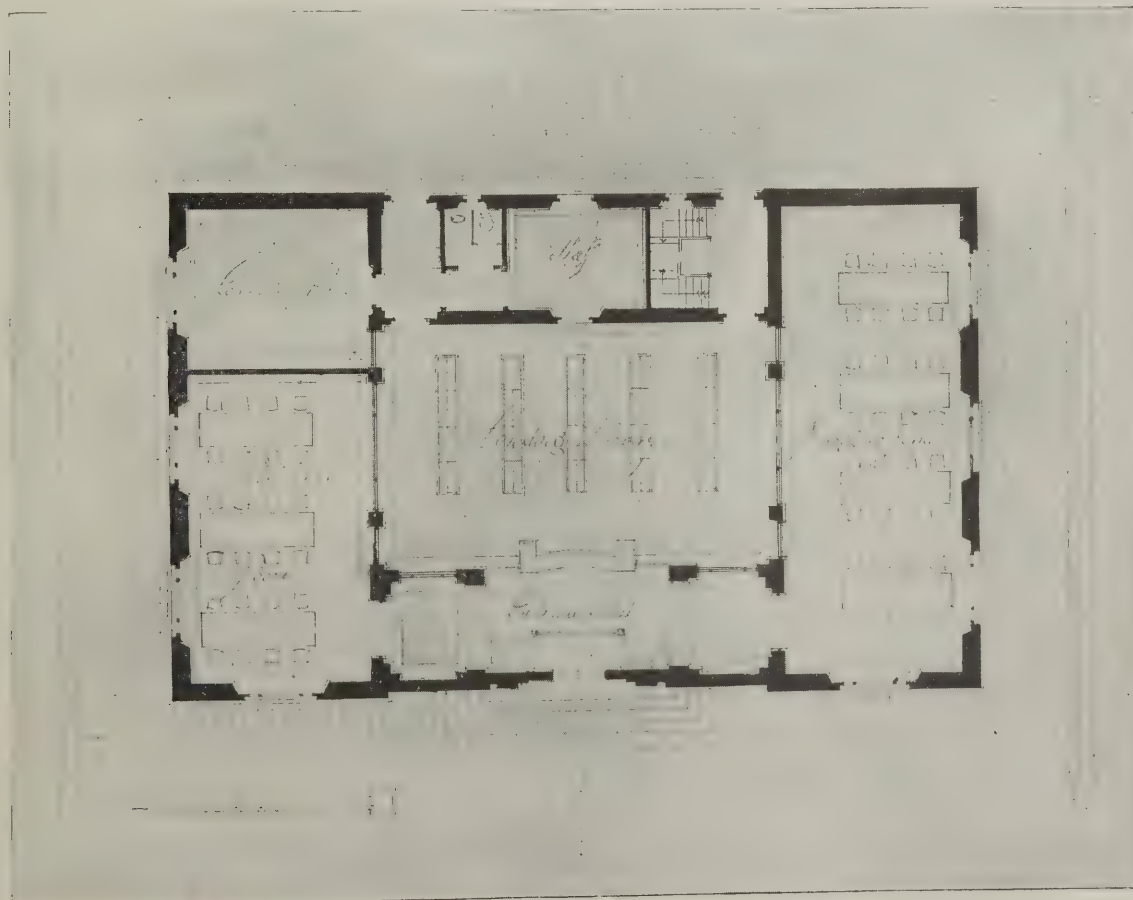
a customary manner of the eighteenth century. It is in strange contrast with the mausoleum in Père Lachaise shown on the same plate. The latter is later in date, belonging to the first half of the nineteenth century. There are hundreds of tombs of this kind in the celebrated Paris cemetery, all of them consisting of massive walling with a cast and wrought-iron entrance door. The detail of the doors is of Greek Revival character, and is designed in good taste.

#### *A Branch Library.*

This design is an example of fourth-year work in the Architectural Association School of Architecture. It is well composed, and the entrance doorway is effectively enriched.

### ARCHITECTS AND NATIONAL SERVICE.

IN his reply to the deputation of architects which recently waited upon him, Mr. Neville Chamberlain said that he would welcome advice as to the most suitable employment for architects under the National Service scheme, for which he asked all professional men to enrol, stating that he hoped to deal with such offers on a suitable basis. The deputation has resulted in the formation of an Advisory Council which has decided to ask all architects in a position to sign the form to send it *in duplicate* to the nearest architectural society allied to the Royal Institute of British Architects, or to the latter in the case of practitioners in London and the Home Districts, so that the whole of these forms may be collected and sent to the National Service Headquarters in the form of a united offer from the whole profession. It is hoped that a prompt and extensive response may result from this appeal.



PLAN OF A DESIGN FOR A BRANCH LIBRARY. BY FRANCISCO MUNGUIA.

## TECHNICAL SCHOOLS FOR BUILDING.

FOR a long time we have held the view that the organisation of building education has not been developed to that necessary degree of completeness which is characteristic of most other branches of technical instruction. It is obvious that if the building industry is to make such progress as will be demanded of it as a result of the great changes following the War, the teaching of building subjects will have to be brought into line with the other branches of science and technology. This result is now being aimed at by the Board of Education, who have just issued a Memorandum on the Teaching of Building in Evening Technical Schools, in which a number of very valuable suggestions are made relating to the general organisation of building classes, accommodation and equipment, and methods of instruction. Under "Accommodation and Equipment," the two plans here reproduced are given, showing the approved arrangement for building school lecture rooms and laboratories. These should be studied in conjunction with the following particulars taken from the Memorandum:

### Arrangement of Rooms.

In order that the best organisation of building classes may be secured it is highly important that the accommodation set aside for the building department, where such a department exists, should form a compact group of rooms, and be wholly self-contained in respect to use of classrooms, laboratories, workshops, etc. The

work of the department as a whole should be conveniently under the eye of the head of the department.

A frequent source of difficulty in the arrangement of appropriate rooms for building classes in a large building is the disturbing effect on other classes of the noise created in the building workshops. Practically, however, this distraction is only serious in the case of the plumbers' workshop, and in much lesser degree in that of the carpenters' workshop. It may be largely mitigated by arranging that the plumbers' shop is situated at the end of the suite of workshops, or in a contiguous outside room. The distraction mentioned is, however, not likely to be serious in the case of a building laboratory or drawing class even if its source is an adjoining room, provided that the intervening walls are of a substantial character.

Where the building classes are not organised as a distinct department it becomes still more important that the various rooms should be contiguous in order that the various teachers of building subjects may be in close touch with each other and so secure co-ordination of the work and the most efficient conduct of the instruction.

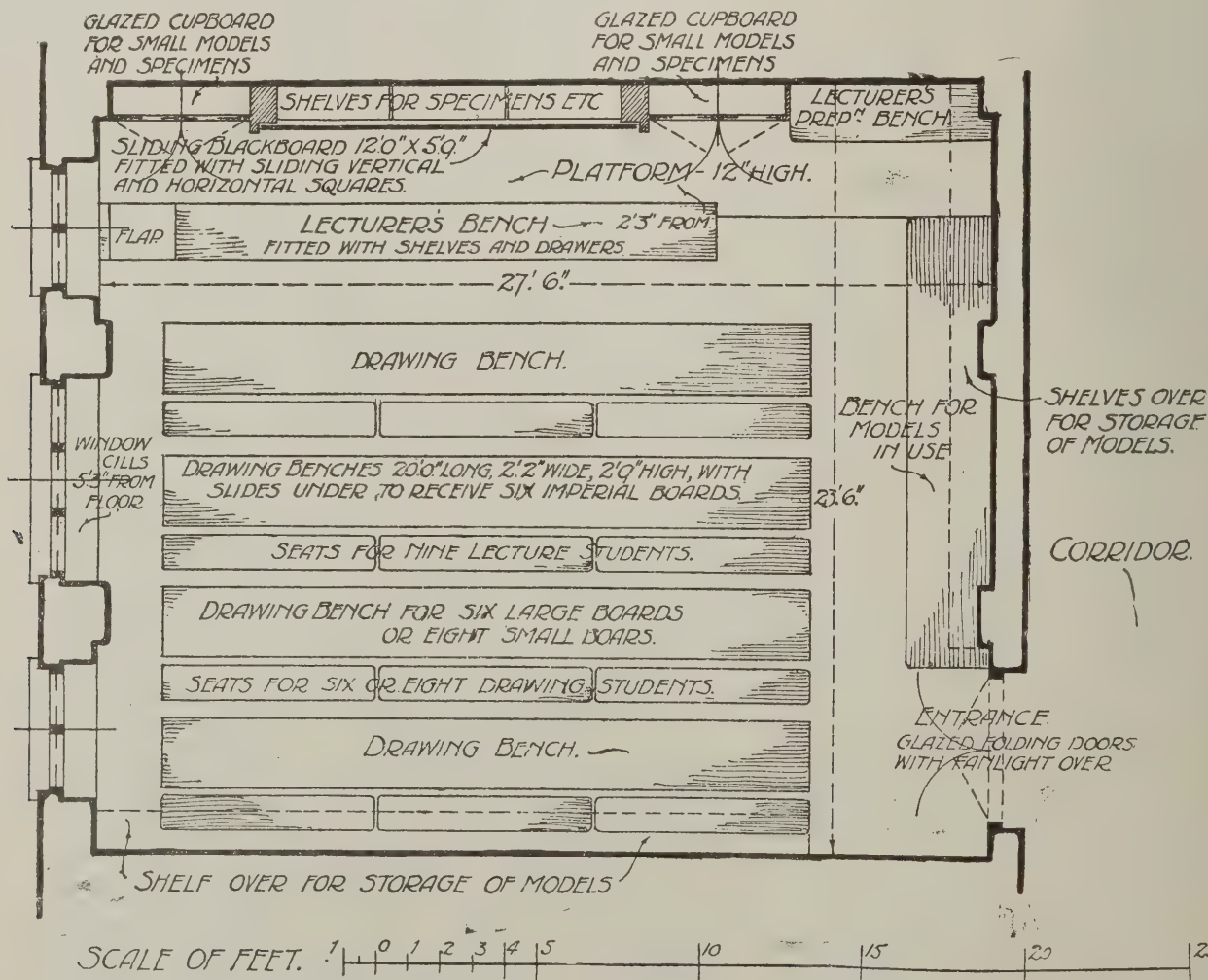
In settling the position of building workshops it is important to remember that suitable means of entry into the school for materials must be made, particularly for heavy rolls of lead, pipes, etc., for the use of the plumbing classes, and blocks of

stone, timber, bricks, etc., for other classes.

The number and proportions of rooms required will depend upon the extent and nature of the work undertaken. In general, however, the rooms which are indispensable and which should, as far as possible, be reserved solely for the use of building students are those mentioned below.

### Lecture Rooms.

For certain classes, such as those in building commercial subjects, or building law subjects, an ordinary classroom will prove adequate. But for all other subjects the instruction is such as to require the use of technical exhibits, demonstration apparatus, specimens, models, diagrams, etc., and the classrooms will in general need to be specially adapted to this end. Further, in all lecture work on building subjects the students will need to be taking sketches, making simple drawings, or examining models during a lecture, and for these purposes the ordinary narrow sloping desk is not the most suitable. In practice it is found that flat-topped desks or tables are most convenient even for the purposes of class lectures in building. Hence the best arrangement is one under which every building classroom is fitted up so as to serve the purposes of either a lecture or a drawing class. This arrangement has the further advantage of simplifying the organisation of a department, for when there is no distinction between



MODEL PLAN OF BUILDING-SCHOOL LECTURE AND DRAWING ROOM BY THE BOARD OF EDUCATION.



The arrangement and equipment of a combined lecture and drawing room is shown by the accompanying plan of an existing room. This room is 27 ft. 6 in. wide, 23 ft. 6 in. long, and 14 ft. high. An extra couple of feet or so would be an advantage in the length, *i.e.*, from front to back of this room, but otherwise it is a very convenient one in its dimensions, all students being near enough to clearly hear the lecturer, to see the drawings and sketches made on the blackboard, and to follow the demonstrations made at the lecturer's table. The windows of the room are carried nearly to the ceiling, and give a good light across the room. Battens on the vacant wall-space provide attachment for diagrams. The floor is covered with cork linoleum, which deadens all sound from shuffling feet or stools and minimises dust. The tables or benches are 2 ft. 9 in. high, and flat topped. They are very substantially constructed so as to reduce vibration during drawing practice, the faces being made of  $2\frac{1}{2}$  in. planks, and the framing of 4 in. by 4 in. quartering. Runners for storage of drawing boards are provided under the table tops, and substantial foot-rails are attached to the framing. The stools which were originally provided have been replaced by short forms, the latter being less liable to be

A room of the type described above serves the purpose of a drawing office, as well as a lecture room. Sometimes, however, a separate drawing office is desired specially for the use of students engaged in advanced design, in connection with which no lectures or demonstrations are provided. The drawing tables in this case may be single or dual spaced well apart, and office stools substituted for forms. Such accessories as an electric printing apparatus and

In all rooms used for drawing purposes a good system of artificial lighting is important. This should be so arranged that no disturbing shadows are cast on the paper. With a suitable ceiling or with special reflecting shades, excellent results can be obtained by indirect lighting, in which only reflected or diffused light reaches the drawing board. A somewhat more economical arrangement is that in which high-candle power incandescent lamps are used either singly or in groups. The dazzling effect of the direct rays of the lamps may be avoided by the use of semi-transparent shades or globes, while reflecting shades fixed above the lamps supply further diffused illumination. Holophane globes or shades, if judiciously selected, may be made to fulfil the same purpose. Where in existing rooms there are incandescent lamps with ordinary opal shades, a strikingly improved effect may be obtained by simply inverting the lamp and shade so that the light is reflected from the ceiling. In this case, however, it is essential that the shades should be frequently cleaned, as dust settles on the inverted shade and reduces its reflecting and transmitting capacity.

A suitable laboratory is an essential feature of any satisfactory scheme of building education. Steps should be taken, in all cases where no such accommodation is available, either to specially





erect a building laboratory or to make the necessary adaptation for that purpose of an existing room.

For the work of a Senior Course an appropriate size for the laboratory is about 1,200 square feet. In a small school where considerations of space are very important and where the class numbers less than twenty students, useful work may, however, be done in a laboratory that is not more than 800 square feet. Preferably, the laboratory should be located on the ground floor, on account of convenience for the drainage and sanitary experimental work. It is, however, an advantage to have the room contiguous to the building construction lecture rooms. The laboratory floor should be of hard impervious material, and the finish of the wall surfaces as simple as possible. If the walls are of brick a neat pointing only gives a very suitable finish. The height of the room on at least one side should be not less than 12 ft., in order to permit of the erection of complete hot-water circulation and drainage apparatus, etc. It is desirable that on this side there should be a minimum of window space so as to afford space and freedom for the erection of the necessary pipes, cisterns, etc.

Roughly speaking, about one-third of the floor space should be allocated to that experimental work which is likely to introduce dust and dirt, and for which the use of considerable quantities of water is necessary. Such experiments are those related to the investigation of limes, cements, stones, etc. The space for this work will usually be at one end of the laboratory, where there will be a suitable arrangement of slate benches, sinks, etc. The room may be so arranged that it can be used for ordinary class work as well as for experiments, and must be provided with a blackboard. The tables should have plain flat tops; they should be firm but not too heavy or too long to be easily moved; they need not be very wide. Small bracket tables attached to the walls are useful for students to write up their notes and observations while conducting experiments.

There should be ample cupboard room, but this should be provided with the least possible sacrifice of wall space. One or more smoke flues should be provided. There should be ample gas and water supply, the latter in sufficient quantity to conduct experiments on flushing and syphonage appliances and devices. Good connections to drains for drainage experiments should be made (a manhole may be built in the room), and gully traps should be arranged to intercept plaster and cement residue.

The lighting of the laboratory is important, seeing that exact observations have to be made in a variety of positions. An absence of shadows is important and can be secured by good diffusion of the light as described in connection with the drawing office.

Subject to the above requirements the detailed arrangement of the laboratory fittings lends itself to variety of treatment. The accompanying plan of a building laboratory (drawn up in collaboration by about thirty teachers of building during a vacation course for teachers in the summer of 1915) will be found suggestive. The accommodation in this is adequate for a class of about twenty. The larger machines suitable for a building laboratory are indicated on the plan.

#### *Workshops.*

The workshops should as a rule be from 600 to 1,000 superficial feet in area for a class of sixteen to twenty students. Con-

crete floors will serve for brickwork, masonry, and plumbing workshops, but in the carpenters' shop wood should be used. The benches should be strong and heavy, those in the masons' shop especially so. The plumbers' shop should have centre benches for pipe work, and the fire-places or gas heaters should be arranged so that students do not need to carry molten metal across the shop. The masons' shop should have ledges for setting-out boards. All workshops should be provided with blackboards, and with ample cupboard accommodation for storage of tools, finished work, etc.

In the larger schools, where a considerable number of grouped courses are established, or where there are Advanced Courses, it will be desirable to provide additional accommodation in order to secure efficient organisation and adequate equipment for effective teaching of the higher and more specialised subjects. Below are some indications of the provision which has been made in certain higher schools and institutions.

#### *Building Museum.*

The assemblage of building models, specimens of materials, diagrams, and building and sanitary appliances, is so great in a large school that it is impossible suitably or properly to store them in the ordinary classrooms. Failing proper facilities for storage it frequently happens that there is no effective use of a large part of the valuable and necessary apparatus, and a museum of the kind suggested becomes a necessity. The museum should be provided with a sufficiency of glass cupboards for the storage and exhibition of specimens of material and similar objects. Specimens and appliances should in every case be suitably labelled and should have a short description attached. For, apart from class use, specimens and appliances which are thus labelled afford students a useful means of employing in private study such time as they may have available. Models should also be kept in cupboards, so that when required for drawing lessons they may not be too dusty for the students to handle. Building appliances, specimens of building "furniture," bolts, locks, etc., and patent devices used in building should be stored

or fixed in appropriate positions. Before fitting up this room teachers are recommended to visit and note the arrangements made at such places as the Parkes Museum, London; the Highgate Sanitary Museum, London; and the Geological Museum, London.

#### *Setting-Out Room.*

This should be a large room (a covered-in area of any kind answers the purpose where students of practical trade classes may set out work on a big scale (the room in this respect corresponding to the mould loft of a ship yard), or where they may erect such exercises in practical work as are too large to be accommodated in the ordinary workshop. The exercises referred to are such, for instance, as a system of drainage, brick walling, arches, or groins; tracery windows; roof trusses; staircases; hot water circulation apparatus. The larger the models the better.

The setting-out room or area may also serve to provide the necessary space for certain indoor exercises of the surveying classes during the winter months.

#### *Studio and Library.*

In some schools a special room is set aside for the use of advanced classes in design, where plaster casts, sets of architects' drawings, and photographs of buildings may be placed to advantage. A small library of books and current trade periodicals is also useful, as affording means of reference and an appropriate place for private study by the students.

### A PIPE-LINE BRIDGE.

The illustration given below shows a interesting little bridge carrying a sewer pipe line for the Easington Rural District Council, County Durham. Mr. G. Waterhouse, Surveyor to the Council, was responsible for the work, which was carried out under his supervision by Messrs. Middleton and Hopper, contractors. The foundations, piers, and T-beam decking of the bridge are of concrete, reinforced throughout with expanded steel sheets and expanded steel bars, supplied by The Expanded Metal Co., Ltd., of London and West Hartlepool.



SEWER PIPE-LINE BRIDGE AT EASINGTON, CO. DURHAM.





## WAR BUILDINGS SECTION

### BUILDING LICENCES AND THE MINISTRY OF MUNITIONS.

AN occasion has arisen for impressing upon builders the importance of most scrupulously observing the letter as well as the spirit of the Defence of the Realm Act regulation which prohibits the carrying out of work without a licence from the Ministry of Munitions. Of the necessity of the regulation there can be no question. It is obvious from the striking evidence which this section of the Journal is providing of the magnitude of the activities essential to success in the life-and-death struggle in which the nation is engaged; and in view of the broad fact that the nation needs every ounce of energy that its people can yield, cases of individual hardship arising from the prohibition to build, or from the scarcity of men and materials, are usually borne with exemplary patriotism and fortitude. No industry has been hit so hard as that of the builder, who, however, makes no loud complaint, although, naturally enough, he sometimes feels justified in making known to the Government instances in which he conceives the restrictions to be beside the mark—to be more harmful than beneficial to the chief aim in view. In such instances the proper course is to approach the Government, not to grumble in letters to the papers, and especially not to disobey the regulations. These should be observed with the utmost nicety, although to keep within the strict letter of the law is occasionally irksome, and, to private judgment may seem unnecessary and even absurd.

The slightest infraction, however, may be fraught with severe penalties, in which building owner, architect, and contractor may all be involved, as they were in the first prosecution under the regulation. At Bow Street Police Court, on March 13, two firms of building owners were charged with having begun and carried on, without the licence of the Ministry of Munitions, certain building and construction work in West London, and an architect was charged with "procuring and abetting the same." Yet the offence was very slight, and one into which it would be easy to

slide almost unconsciously. Briefly summarised, the facts are as follows: Applications were made for a licence to carry out work at a cost of about £2,000 or £3,000, and were refused. A further application to carry out work estimated to cost £500 was also refused. It was then intimated that the plans for the work had been so altered as to reduce the cost of the work to £450. On inspection of the work, however, the authorities held that the construction and decoration in progress would exceed the £500 limit, and thereupon a prosecution was instituted. In the result one of the defendants was fined £100, two were fined £75 each, one £50, and one (the architect) was fined £25, and, in addition, each defendant had to pay five guineas costs. By the advice of their counsel all the defendants had pleaded guilty. In all probability the "guilt" was technical and unintentional, and we cite the case as illustrating the perils attending any attempt to sail close to the wind in the delicate matter of estimating the cost of building work.

We all know the difficulty of preparing a close estimate, and the ease with which the most careful estimate is exceeded when the work is being done. Under ordinary conditions "extras" are a recognised contingency. This prosecution shows very clearly, however, that "extras," or any excess over the estimate, will not—indeed, cannot—be tolerated, and the moral is that the £500 limit is the extreme outer circle, within which a prudent builder will draw a smaller as the safe boundary of his operations.

In the case under notice, it was admitted by the magistrate that the architect had acted very frankly in the matter. His position was that he had misunderstood the regulation, about which, indeed, nobody seems to have been very clear. One of the defendant firms showed that the particular work entrusted to it did not exceed £500, and thought, therefore, that the regulation was being duly observed. Other defendants were similarly confused,

and the magistrate remarked upon this that if they did not understand the regulation they should have taken advice about it.

That, obviously, is the proper course, if severe penalties are to be avoided; and now that this case has been made public, correct interpretation of the regulation will be less difficult.

It is important to note that infraction of the regulation is punishable by imprisonment. At first sight this may seem to be a very harsh provision, but the reason for it is tolerably clear. In legislation of this kind, it is always foreseen that a mere fine of a few hundred pounds might not be a sufficient check on wealthy owners, who might be inclined to regard it as a sort of business investment which would enable them to get ahead of their competitors, or to save in time more than the value of the money. No suspicion of this sort attaches to the case under notice, as the offence was clearly not wilful.

It is not necessary, however, to deter builders from diverting labour and material from patriotic purposes. Much has been suffered and sacrificed uncomplainingly in this cause. In this and in other ways the building industry is behaving splendidly, and hereafter will have just reason to be proud of its war record. As the largest synthetic industry in the country, it has probably sent more men into the Army and Navy than has any other industry. And the men are of the right stamp—hardy, accustomed to "roughing it" out of doors, handy in the use of tools, and rather fond of fighting. Architects and master-builders and their sons have, by reason of their versatility and their grasp of practical details, made highly competent and indeed supremely competent officers, who have in many instances won high distinction for their skill and ability and their powers of organisation no less than for their valour as fighting-men; and those who perforce remain at home may be trusted to act in the same spirit, always putting their country first.



## WAR EMERGENCY HOSPITALS III.—A CAMP HOSPITAL.

**C**ONTINUING our series of articles on War Emergency Hospitals (Huddersfield was dealt with in our issue for February 7 and Shorncliffe in our issue for February 28), we now give some particulars and illustrations of a large camp hospital in England. The special interest of this scheme is in the form of construction adopted—"Hy-Rib"—and instead therefore of showing general plans of the hospital and photographs of its equipment, we have confined the illustrations to two exterior views of the ward blocks (on this page) and a drawing showing the details of construction (on the opposite page).

The hospital has accommodation for 600 beds. The ward blocks are 140 ft. long and 28 ft. wide, the height from floor to eaves level being a little over 8 ft.

The skeleton of the buildings consists of steel stanchions of 4-in. by 3-in. section, placed at 10-ft. centres, carrying steel roof trusses. In the majority of the buildings there are 10-ft. bay windows, and to carry these two timber uprights were run from foundation to eaves level. Where no windows occurred a single timber was fixed exactly midway between the stanchion uprights. "Hy-Rib" was then used to clothe this skeleton, the ribs of the material being arranged to run horizontally so that at no point did the sheets

span unsupported over a greater distance than 5 ft. An admirably rigid construction was thus secured.

On reference to the drawing it will be seen that hollow walls have been formed, the width of the cavity being equal to the depth of the joist—4 in. The "Hy-Rib" was used with the rib inwards to the steel and timber framing, and the lath outwards. It was then secured to the steel framing by means of special clips, and where the sheets intersected with the timber framing they were fixed to this framing by 2-in. staples. A  $\frac{3}{4}$ -in. coat of cement plaster was applied to the lath side of the "Hy-Rib" forming the outer face, and  $\frac{1}{2}$  in. of cement plaster to the lath side forming the inner face. The plaster on the external wall was waterproofed with "Fludpruf" paste, one part of this being dissolved in every eighteen parts of the water used for mixing the cement plaster.

By using "Hy-Rib" in this way a hollow wall with all its advantages was obtained for practically the same cost as a solid wall. A solid wall would need to be not less than 2 in. thick, so that with the hollow wall construction a saving of  $\frac{3}{4}$  in. thickness of cement plaster is effected, which off-sets the extra quantity of "Hy-Rib" used.

The buildings were completed with great

rapidity, and have given entire satisfaction to all concerned.

We should like to be able to deal in detail with many other buildings carried out on the same system of construction, but must content ourselves with the bare fact that at least one building 70 ft. high has hollow walls formed of "Hy-Rib," as here described and illustrated.

The engineers acting on behalf of the War Office in connection with this camp hospital were Messrs. Balfour Beatty and Co., of London.

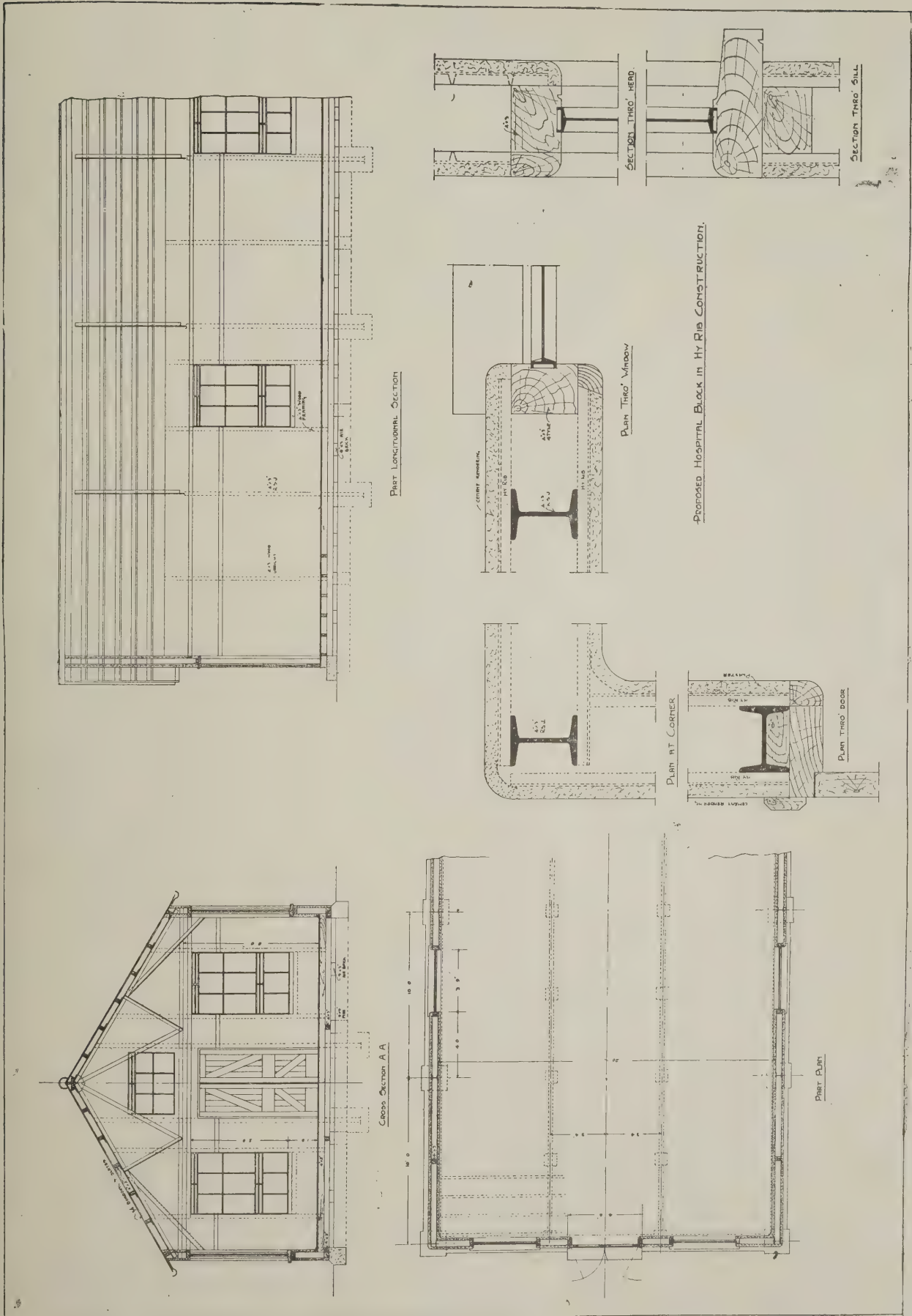
### *Huddersfield War Hospital.*

Mr. F. W. Sykes, of Green Lea, Lindley, has sent a donation of £1,000 to Colonel Marshall for the special purpose of adding a ward to the Huddersfield War Hospital, in order to meet the demand made by the authorities for further accommodation for wounded soldiers. The hospital was designed to accommodate 500 patients, with the requisite accommodation for the administrative staff. The buildings consist of ten wards, together with administration block, kitchen block, operation block, R.A.M.C. block, pack store, recreation block, mortuary, hospital supply block, and disinfecting block, with boilerhouse adjoining.



A MILITARY CAMP HOSPITAL: WARD BLOCKS.





A MILITARY CAMP HOSPITAL: DETAILS OF CONSTRUCTION.

## VENTILATION, HEATING AND LIGHTING OF MUNITION FACTORIES.

IN the design of buildings to be used as munition factories and workshops it is of the utmost importance that everything possible should be done to secure that the work is carried on under the conditions most favourable to the maintenance of the health and physical energy of the workers. During the progress of munition making in this country this has been proved in the most remarkable manner, and the results obtained have set up a standard of accommodation and equipment which will permanently affect all factories of the future. We therefore present the following extracts from a Memorandum that has been issued by the Health of Munition Workers Committee, appointed by the Ministry of Munitions:—

### *Ventilation.*

The enquiries of the Committee have led them to believe that the attention paid to ventilation and to the closely associated problem of heating is in the majority of workshops insufficient: the ends to be aimed at are frequently misunderstood, and the means of securing them are, in consequence, ill directed or altogether neglected. At the present time the importance of proper and effective methods of ventilation is often intensified not only by the increase in number of workers, but by the continuous occupation of shops by day and night; there is under these conditions no interval in which natural ventilation can restore a vitiated atmosphere, and each shift succeeds to the bad conditions left by its predecessor.

The object which ventilation seeks to secure is twofold—namely, the removal of foul, exhausted or polluted air, and the supply of fresh air in its place—that is, (1) air which is pure and clean for the workers to breathe, and (2) an atmosphere which is stimulating and refreshing. Air which is entirely pure from the chemical point of view may afford an atmosphere of a most depressing character which is highly detrimental to physical efficiency. It is not enough to aim only at clean air, as has been often customary in the past, or only at a stimulating atmosphere. In any consideration of ventilation both objects must be constantly in mind.

As to temperature, for a shop to be too hot is disadvantageous from every point of view, but the stimulation of too cold an air may be more than counterbalanced by the physical depression which results, and it is not difficult in cold weather for efficiency to deteriorate because the worker becomes uncomfortably chilled. It is hardly desirable to attempt any definition of the "best" temperature, since this must be subject to wide variations with the character of the work and the habit of the worker. It is evident that sedentary workers require a warmer atmosphere than those engaged in more violent labour, and attempts to obtain conditions satisfactory for both classes in the same shop will probably end in suiting neither. It may, however, be suggested that where the air is stagnant the temperature should not exceed about 60 deg. Fahr.; though it may be somewhat higher where the air is kept in motion.

### *Heating.*

Means of heating are usually restricted by practical considerations to some system of steam or hot-water pipes. The ideal form is no doubt by radiant heat, and the Committee have found that rather old-fashioned stoves scattered about a shop

may give good results, and they have observed the excellent and invigorating conditions which prevail in many smithies and forges. Gas-heated radiators, in which the burned gas escapes into the shop, are not permissible. The plan by which warmed air is pumped into the shop—commonly known as the "plenum system"—tends to create an atmosphere of a highly relaxing and depressing character. It affords a striking example of how chemically pure air may by its uniformity and monotony constitute an atmosphere in which good work is hardly possible. The means of ventilation should be kept separate from that of heating, and the "plenum system" should only be used to pump in cool air in summer.

The most complete installation for ventilation and heating may be rendered ineffective by injudicious management or failure in proper and continuous maintenance. Rapid changes of climate, different times of day, varying circumstances of use and occupation, all require appropriate treatment. If, for example, the windows are shut because it is a cold morning, there is a probability that they will usually not be opened again till the shop is much too hot. Such mismanagement is frequently due to the fact that it is the prescribed duty of no one in particular to observe the prevailing conditions and put in operation the appropriate appliances for the supply of air and heat. The Committee are of opinion that the ventilation and heating of each shop or group of shops should be in the charge of some responsible person specially detailed for the purpose, and they recognise that the effective maintenance of ventilation depends in large degree upon the vigilance of the workers. It is for the management to provide the means, it is for the employé to aid in their use and application.

### *Lighting.*

Natural lighting is to be preferred to artificial lighting on grounds of health as well as of economy. Where it can be arranged, roof lighting is generally to be preferred to lateral lighting. In a good system of roof lighting the illumination is very uniform. In modern factories where lateral lighting is employed, a large proportion of the walls is given up to windows, but it is evident that there is a limit to the width of the room beyond which the illumination falls below what is adequate; what this width is will depend partly on the nature of the work to be done in the shop and partly on the extent to which the light is impeded by outside obstacles, such as neighbouring buildings, or inside obstacles, such as machinery.

The effect of light-coloured walls and white ceilings on the general brightness of the room and in affording an effective background to dark objects should not be overlooked. In some cases the natural lighting may be improved by deflecting vertical light into the room by means of reflectors or prismatic glass, or by whitening the surface of an external wall or building which obstructs the light. The position of permanent working points should be so adjusted in relation to the windows and to internal obstructions of whatever kind as to secure, so far as practicable, adequate daylight for each.

The necessity for the regular cleaning of windows on the inner and outer surfaces cannot be too much insisted on. Not only do dirty windows prevent a large proportion of daylight from entering the shop,

but the daylight period of work is considerably shortened and needless expenditure on artificial lighting incurred in consequence. At the present time the anti-air-raid darkening regulations have much intensified this loss of natural light. In the construction of shops care should be taken to render the outsides of windows easily accessible for cleaning. In many existing shops access is so difficult as to make cleaning almost impossible.

The question of artificial lighting is of special importance at the present time when night work is general, and when women and boys are employed in large numbers. Bad lighting affects output unfavourably, not only by making good and rapid work more difficult, but by causing headaches and other effects of eye-strain. The difficulties of supervision, which are always considerable, are further increased if the general lighting of the workshops is insufficient.

A factory may be instanced where in one shop the ceiling was uniformly whitened and illuminated by arc lights which were shaded from the workers. The shop was illuminated by an agreeable diffuse light which cast no shadows. To produce the best effect the entire top surface can be covered with sheets of metal and enamel white. Such a method of lighting may prove to be more costly in upkeep, but has compensatory advantages in promoting the health of the workers, and this may prove to be economical in the long run. In an adjoining shop the light was carried out by electric lamps suitably shaded to throw light down the lathe, and not on the eyes of the workers. In still another shop of the same factory fish-tail gas burners were used, the lighting by such means being very poor and quite unshaded. Owing to the impoverished illuminating power of gas its use without incandescent mantles is to be condemned. But excellent lighting obtained by the use of incandescent mantles and gas under pressure. Lamps in lofty shops can be placed high so that they shed a diffuse light without directly throwing a glare into the workers' eyes.

### A MODERN FACTORY.

Within the short space of eight months the premises of the Willesden Paper Canvas Works, Ltd., which were almost wholly destroyed by fire last July, have been entirely reconstructed. The new works were officially opened on Wednesday last. They have been erected from the designs of Mr. A. G. Shaw, Harlesden. Occupying an acre of ground the new buildings comprise a large machine-room, brewing-house, boiler house, and making-up department, whole constituting an excellent example of modern factory construction and equipment. Electric power is employed throughout, except for the drying machine which is steam-heated. At the present time one machine only is installed, two others are to be erected almost immediately. The company is employed for time being on Government work of manufacturing canvas on their Willesden Green cupra-ammonium process. It is anticipated, however, that by the month of June at latest the waterproof-making machines will again be in working order.



## NEWS ITEMS.

*Proposed Memorial Hospital.*

The erection of a hospital building at Corbridge is suggested as a memorial to the brave lads from the district who have laid down their lives for their country.

*New Chemistry Laboratories, University College, London.*

The whole of the glazed fireclay sinks and channels in the above laboratories described and illustrated in our issue for March 7) were supplied by The Leeds Fireclay Co., Ltd., of 2 and 3, Norfolk Street, London, W.C.

*Proposed War Memorial to the Middlesex Regiment.*

It is proposed to erect a memorial to the officers, warrant and non-commissioned officers, and men of the Middlesex Regiment who have fallen, or may fall, during the present War. The scheme is a development of the Cottage Homes, already successfully initiated, with a view to the erection of a group of cottages, supplementary to the two built at Mill Hill in memory of those who fell in the South African War, which have been a conspicuous success. A sum of £200 has already been subscribed.

*Plan of New London.*

During the War very useful work had been done in connection with the plan for the development of Greater London, said Lord Plymouth at a meeting of the London Society on March 14. The plan would not be published till after the War, when no time would be wasted in taking up the work. Mr. Paul Waterhouse mentioned that the plan was "as large as two billiard-tables placed end to end." Sir Aston Webb said Mr. Walter Long (late President of the Local Government Board) had favourably considered the plan, and had undertaken that no buildings should be erected which would interfere with the arterial roads which it provided for.

*Brighton Memorial to Indian Soldiers.*

A design has been chosen for the memorial to be erected on the Downs at Brighton in honour of the Indian soldiers who died in the War. It is the work of Mr. E. Henriques, formerly a student at the Bombay School of Architecture, and consists of a cupola, supported by six pillars, at the top of a tier of steps. The monument will be of pure white marble. The Indian Government and the Brighton Municipality are combining to meet the expenditure. A further memorial is promised by the Indian Princes and people. This, it is expected, will be a distinctively Indian building, and will be erected in Brighton.

*Building Materials Dumped on Roads.*

At Northampton Petty Sessions three builders were summoned for obstructing roads by means of a quantity of building material. Defendants, who admitted the offence, said that up to the present, when building houses, they had been allowed to use the road for their material. The Chief Constable said he did not know this practice was allowed, and he did not take action until a milk cart had been overturned. It was a very dangerous practice. The Mayor said the Bench had no desire to stand in the way of the builders carrying on their business. At the same time, when the streets are so dark it was a serious thing to leave things in the road-

way, as they might be a source of danger to vehicular traffic. The practice had hitherto apparently been allowed, but whether it ought to have been was another matter. There would be a fine of 10s. on this occasion, but future cases would be more severely dealt with.

*Flat Roof Toppings.*

Cement finishings to concrete flat roofs are being increasingly adopted in many parts of the world. Perhaps one reason for their being favourably regarded is because experts are not necessary to lay them over the reinforced concrete. We learn that the roof of the sergeants' quarters at Charbagh, India, has been given a 1½-in. Pudloed cement topping, and the garrison engineer, Lucknow, has expressed his satisfaction with same. In hot climates like India cement toppings to roofs are unaffected by the intense heat when they are covered with gravel, coke breeze, small shells, or other loose materials to counteract the fierce rays of the sun.

*Temporary Huts.*

Messrs. W. A. Harper and R. J. Shield, of London, have taken out a patent (No. 102,750) for portable or temporary huts, etc., for military, hospital, and other purposes, which can be rapidly erected and dismantled for removal. The outer walls are formed of sheet-metal panels secured upon the outer faces of T-iron stanchions along the walls, or to channel-shaped stanchions at the angles of the building, by slotted staples provided with wedge-shaped copper pins. The stanchions carry the roof and are secured below to a channel-section girder, which carries the floor joists and is anchored to a concrete foundation. The inner walls consist of asbestos boards secured to rectangular frames bolted to the stanchions, the joints between the boards at the stanchions being concealed by cover-plates if necessary. The outer walls are provided with fitted window frames, corresponding apertures being formed in the inner boards. Doors are arranged in such a way that the door post or jamb is formed by one of the frames secured to a T-stanchion.

*The Shortage of Houses.*

At the annual meeting of the Birmingham and District Property Owners' Association the following resolution was adopted: "That this meeting views with deep concern the present unparalleled shortage of houses, particularly for the working classes, which is daily increasing, and being of opinion that the original and principal cause of so grave a state of things is both directly and indirectly due to the effects of the provisions of Part I of the Finance (1909-10) Act, 1910, as regards increment value duty, undeveloped land duty, and reversion duty, which has largely destroyed the confidence of investors in and lenders upon this class of security, previously regarded as the premier national security, urges His Majesty's Government to take prompt steps to remove the legislative provisions referred to, and to give in every possible way their encouragement and support to private enterprise and co-operative effort in the provision of healthy dwellings for the people."

*Altrincham Housing Scheme.*

The chairman of the Housing Committee informed the Altrincham Council last week that there was not a house to be got in Altrincham, and the scarcity was causing a great deal of discomfort. There was likely to be a large influx of people

owing to the erection of new works, and the fact that they had got to be provided with homes would compel the Council to take action of a very definite kind. The Local Government Board were pressing them to prepare a scheme, and he asked the Council to authorise the committee to take into consideration the acquisition of a portion of the Oldfield Hall estate. He explained that the trustees of the Earl of Stamford were willing to lease ten acres at a yearly rental of £201 or to sell it outright at £5,000. There was room for 172 houses. The Council authorised the Housing Committee to take the matter into consideration without delay, and a suggestion was made that they should also consider other sites in the district.

*Steel for Reinforced Concrete.*

Since reinforced concrete was introduced into this country it has been customary to employ plain round mild steel bars, but Mr. A. W. C. Shelf, in his paper on "High Tensile versus Mild Steel for Reinforced Concrete," read before the Society of Engineers last week, endeavours to prove that plain mild steel bars are not the best to employ for this purpose, but that greater efficiency and economy is obtained by physically developing mild steel bars, for the purpose of taking out the first yield in the steel, which is useless, and has a detrimental effect in concrete. When this first yield or stretch is taken out, a higher yield point is obtained without any injury to the steel, so that it is safer to employ a stress of 20,000 lb. per square inch (which results in a saving of 20 per cent. in the weight of steel required) than it was to employ a stress of 16,000 lb. per square inch before the steel was physically developed, and for this reason the author of the paper holds that the existing regulation of the London County Council relating to the stress on steel should be altered to avoid the cramping of industrial progress.

*Glycerine from Refuse.*

So great a success has been the scheme for the collection and treatment of camp refuse (the value of which was indicated in the article in our issue for last week) that an effort is to be made in Nottinghamshire to go a step further and collect bones, fat, etc., from householders. Since the Quartermaster-General's Department called in several leading men in the soap and degreasing trades to meet them and formulate a scheme for dealing with camp waste for glycerine and broken food for pig feeders, some remarkable results have been achieved. During the month of April, 1915, in which the scheme was initiated, a weekly return to the Army for camp refuse was about £1,800, but it has now approximated to half a million sterling per annum. Glycerine has been extracted sufficient to provide the propellant charges for large numbers of 18-pounder shells. Further, the production of this glycerine enabled the Ministry of Munitions to dispense with over 1,000 tons of foreign glycerine, at a saving in cost of £180,000. Between 14 lb. and 20 lb. of household bones will provide the glycerine propellant for one 18-pounder shell. Every householder can, therefore, assist by providing through the medium of waste bones the vital necessity of glycerine propellant for at least two or three shells per annum. The Food Controller and the Ministry of Munitions have requested Mr. George A. Shangland, managing director of Messrs. Samuel Meggett and Sons, Sutton-in-Ashfield, Notts, to investigate the subject and, if necessary, to make experiments on a somewhat extended scale.



## A SALONICA CHURCH.

The interior here illustrated, from a sketch supplied by Sapper Oscar F. Turvill, serving with the forces at Salonica, shows a Greek church, typical of the many villages dotted about the hills of Macedonia. Mr. Turvill says:

The building is rectangular in plan, with a niche in the rear wall to serve as a set-off to the simple form of altar. The figures on each side of the cross are not carved, but are merely cut—or, rather, shaped—out of a flat piece of metal, and painted in most vivid oils. The figure of Christ is also similarly fashioned, but is painted with less conspicuous colours.

Pictures of various saints decorating the panels are also done in bright colours on metal. These pictures are secured by a moulding tacked in, or, rather, "nailed," some parts of the moulding being split in the process, while the heads of all the nails show. Columns, caps, and arches are shams—they are not brick piers plastered, but mere skeleton frameworks of wood lathed and plastered. The pulpit is of similar construction, and the ceiling is butt-battened with a joint mould tacked on.

The screen is finished to resemble wax-polished oak. The relief arches are cut like fretwork, as are also the leaves tacked on to the spandrel.

The balcony is of lattice canework on cut brackets, and is so arranged that the occupants of the balcony can see without being seen.

The bottom step of the pulpit stairs is above the top rail of the stalls or seats.

The workmanship throughout is crude, but an occasional ogee, or ovolo, creeps in to break the general monotony.

The ashlar paving is the most honestly constructed part of the building, and even here the builders evidently thought mud a suitable substitute for closers.

In this same village is a Turkish mosque, which apparently has been long unused. It is bare of all furniture whatsoever, and even the women's gallery has been taken out. It is conjectured that the Greeks had been trying to do away with this religion, and in order to entice the Turks to the

Greek Orthodox Church, constructed in the Greek church the gallery in which the women could see without being seen.

## BOOK NOTICE.

### *Architecture and Building for the Laity.*

Of the many books on architecture that have been written for the laity, most can be ranged in one of two classes. In the one, the reader is assumed to be acquainted with the rudiments of the subject; in the other, it is almost superstitiously held that his mind is completely blank, and the writer seems anxious not to plough the virgin soil. In the former case, the architectural information imparted is too technical; in the latter it is vague and unsubstantial, because the author is afraid of calling things by their right names. Which is the more polite assumption—that the reader knows all about it already, and is merely seeking exercise for his knowledge, or that he knows nothing whatever and does not really want to learn anything, is a question for casuists, but we should imagine that, at any rate, both methods are about equally futile, and the wonder is that writers persist in them so doggedly as they do, whether the subject is architecture or anything else which has a terminology of its own or demands the mastery of a modicum of technical detail.

The J. B. Lippincott Company, of Philadelphia, have, in a whole series of books, broken away from these inveterate traditions, and have evolved a more excellent way of imparting technical education to non-technical readers. They call it the "Practical Books" series, and, if "The Practical Book of Architecture" is a fair sample of the bulk, the title is not greatly misapplied. The book begins with "An Illustrated Terminology of Architecture," which, "designed to acquaint the reader with the names of certain commonly seen architectural features, familiarity with which should be regarded as a part of everyone's education," shows seven pages of photographic views comprising Egyptian columns and the Classic Orders, the principal parts of a classic entablature, common architectural ornaments of classical origin, various Renaissance

features, and so forth—in short, the alphabet of the subject, so that the neophyte may see at a glance the difference between a fillet and a flute, a Greek key and a guilloche; and, throughout the book, an explanatory label is affixed to every object. In this respect the work is unquestionably and determinedly practical.

That is all very definite, and very useful to the beginner, for whom the advice is no less necessary than sound, that "we must think of architecture regardless of its divisions into domestic, monumental, ecclesiastical buildings, as a perfect correlation of the three essentials of suitability, strength, and beauty." The aim of the book is two-fold. Part I. provides a practical guide to styles, and is designed to give, as part of a liberal education, "a thorough working knowledge" of architecture and architectural styles for the use of the general reader, and Part II. is a practical guide to building, for those who intend to have houses or other buildings erected for them, or who are connected with advisory boards that are responsible for the erection and maintenance of public buildings. In the first part there are nine chapters; in the second part, four; and both sections are done so admirably that, while they are frankly dedicated to the laity, there is much in both sections that the professional man will be interested to see. He should, indeed, find particular gratification in the fine collection of illustrations—255 in number—which show, in the main, the excellent lines on which modern American architecture is developing, and how closely and constantly, and with what admirable results, it follows enduring traditions. Mr. Mallack Price has done his work well and thoroughly.

"The Practical Book of Architecture." By J. B. Mallack Price. 348 pages, 9½ in. by 7 in., price 25s net. Philadelphia and London: J. B. Lippincott Company.

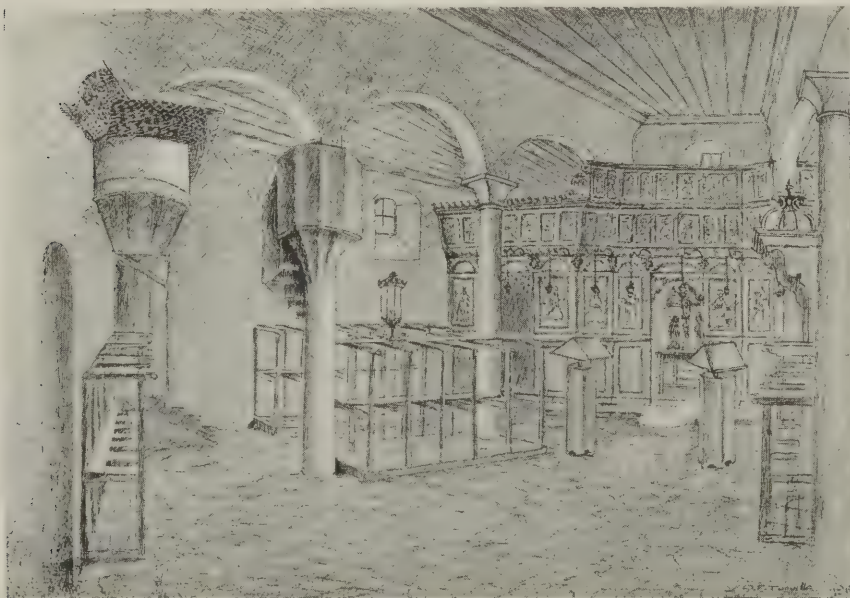
## OBITUARY.

### *Mr. A. T. Hardwick.*

Mr. Arthur T. Hardwick, architect, who died at his home in Blackpool, was only twenty-eight years of age. He had been ill for some considerable time. He was educated at the Blackpool Grammar School, afterwards serving his articles with Mr. Burns, architect, Blackburn.

### *Mr. Hippolyte Blanc.*

The death occurred in Edinburgh recently of Mr. Hippolyte Blanc, R.S.A., architect and archæologist. Though of French parentage, Mr. Blanc was born in Edinburgh. He was a pupil of the late David Rhind, architect, and for two years before engaging in the practice of his profession on his own account was chief assistant in the office of H.M. Board of Works. He was elected an Associate of the Royal Scottish Academy in 1892 and Academician in 1896. Mr. Blanc, who was a Fellow of the Royal Institute of British Architects, a F.S.A.Scot., and a J.P., had held many honorary positions. He was several times elected president of the Edinburgh Architectural Association, was vice-president of the Scottish Society of Arts, and president of the Edinburgh Photographic Society. Among other public buildings he designed and erected are the Thomas Coats Memorial Church Paisley; St. Cuthbert's Church, Edinburgh (enlarging); the Edinburgh Village Asylum, Bangour; and he was the architect of extensive restorations, including that of the Old Parliament Hall, at Edinburgh Castle. He was the author of numerous published articles on architectural and archæological subjects.



A GREEK CHURCH AT SALONICA.

DRAWN BY SAPPER OSCAR F. TURVILL.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MARCH 28, 1917.

TOHILL STREET, WESTMINSTER.

VOLUME 45. No. 1160.

RELATING to the selection of Lord Crewe as the new chairman of the London County Council, a fair-to-medium story is told by a correspondent of the "Leeds Mercury." Lord Crewe, of course, is son-in-law to Lord Rosebery, who was the Council's first chairman and was not remarkable for patience in that capacity. One speaker he besought "to let us have something in the concrete," "and," the narrative proceeds, "this completely nonplussed the orator, whose knowledge of the concrete appeared to be confined to the building trade with which he was associated." That incident must have happened (if at all) between 1889 and 1892, which brief span covers Lord Rosebery's two periods of office; since when the builder's appreciation of the concrete has grown much more rapidly than that of the Council as a corporation; for it was not until 1915 that it issued a reasonable set of regulations on the subject—revised, corrected, and considerably augmented.

A strange obsession of the public mind, that architects are not entitled to fees unless their designs are executed, has been corrected many a time by legal process, but the misapprehension is still prevalent. A case in point is reported in the present issue, the defendants to a claim for fees alleging that the arrangement was "no work, no pay." No such agreement was proved, however, and in the result the defendants agreed to judgment for a hundred guineas. In such cases, "no work, no pay" is, it is superfluous to say, a specious fallacy. Clients are too apt to regard architectural designs as mere scraps of paper on which the draughtsman has exercised his facile skill of delineation, and they have a vague idea that the joy of doing it should be its own reward. Then, again, they are prone to concentrate exclusively on their own interests. They derive no benefit from the designs: why should they pay for them? That this view is so widespread lends colour to Mr. Gilbert Chesterton's familiar paradox that "of all men, business men are the most unbusinesslike"; and it cannot be too emphatically borne in upon them that reputable professional men do not gamble on "no-building-no-pay" principles.

From the official report of the R.I.B.A. informal conference on "The Education of the Architect," it appears, as was to be expected, that the discussion did not altogether avoid the temptation to regard science and art as opposing forces. This quite unnecessary antagonism threatens to become a first-class nuisance in the reorganisation of general education, where, however, rival vested interests add to the controversy a bitterness that is not at all likely to vitiate the serene atmosphere of No. 9, Conduit Street. Here, indeed, a gallant attempt was made to show that science and art are one—an ingratiating idea that seemed, however, rather to scandalise an educational expert—not an architect—who contended, in effect, that while art, the blossom and fruit, may be rooted in science, it is inadmissible to reverse the spell. We are glad, however, to find Professor Lethaby declaring, with his wonted incisiveness, that art and science, as commonly understood—or, rather, misunderstood—are mainly figments of a blurred and nebulous imagination—that stripping these things of their husks, we

come down to the kernel of common sense. It is a healthy and steadying view, and if it were everywhere thus sturdily maintained, there must ensue a useful and much-needed correlation of physics and metaphysics. This, however, should begin in the lower forms of the public school, where, hitherto, a standing feud between science and the arts has been rather intensively cultivated. That nonsense should now come to an end, and the R.I.B.A., by getting into closer touch with the public schools, is slowly but surely effecting a much-needed change of view.

Appositely enough, Mr. A. Clutton-Brock, in an article on "The Relation of Art to Science" which he contributes to the "Times Educational Supplement" of March 22, cites architecture in illustration of his argument that there is no natural opposition between science and art. Opposition occurs only as "the result of a science and an art irrationally specialised." All the art in things of use, the most important and instructive art we have, arises naturally out of applied science. "Take, for instance, architecture, the chief of all arts. It arises naturally out of the applied science of building. By that science men learn to make buildings well fitted for their purpose. To do so is the science of building. But, having done so, they find that buildings so fitted have a beauty arising out of their fitness, a beauty which they have not intended, but which they recognise with delight. This beauty is not artistic; it does not express the emotions of man; rather it is a kind of natural beauty which we may call functional, since it is the result of the expression of function. It is, in fact, the product of science, not of art. But when the builder recognises this beauty, he proceeds in his next design to emphasise it consciously, and in that emphasis to express his own sense of it, and then at once he becomes an artist as well as a man of science. But there is no opposition between the two in him." Sublimely simple! It does away most completely with what Professor Lethaby calls the "obfuscation and obscurantism" of the subject. But nevertheless it evades (no doubt judiciously) the clear issue—"looks it boldly in the face and passes on." To show that art is based upon science is rather superfluous; the whole question being the choice of dimensions for that base, which must necessarily vary with the incidence. It is all a matter of proportional representation; and it is this question of the relative ingredients of the "mix" that is causing all the trouble among educationists.

Peterborough has just been celebrating, in a very modest and duly solemn way, the eighth centenary of its cathedral, Abbot John of Sais having laid its foundation-stone in March, 1117. It is almost a matter of course that other churches formerly occupied the site, and that they were destroyed by direct assault and by accidental fires; and, like many another building of its age and class, it was so slowly completed as to show distinct traces of the development of style. An interesting feature is the flat ceiling to the nave—a survival which serves as an impressive reminder that vaulting was an achievement of a later day, and that its static principles were mastered after many disastrous failures. Peterborough, indeed, is a relic of the more primitive methods which preceded the mag-



nificance to which Gothic attained in the thirteenth century, and is for that reason more interesting as a "document" of architectural history than many a nobler fane. Its west front, however, has been not inaptly described as "glorious," and its "three gables great and fair" are celebrated in William Morris's "Earthly Paradise." Built as an Abbey, Peterborough Cathedral acquired the latter designation when Henry VIII. founded his six new sees. Peterborough, it is rather curious to note, is so short a distance from Ely that the towers of the one cathedral can be seen from those of the other. Peterborough city is in the centre of what is perhaps the most prolific brickmaking industry in the kingdom—when there are no restrictions on building.

\*       \*       \*       \*

A daring suggestion is made in the "Journal of Education." It is that "if, after the War, we carry out such immediate reforms as the reduction of classes, we shall have to rebuild our London schools, as churches were rebuilt after the Great Fire." It is an alluring prospect, but we detect some lack of parity in the conditions. One was under the impression that, after the Great Fire, the new churches were built because the old ones had been destroyed—a fate which will not, surely, overtake our schools as a consequence of the Great War. In our contemporary's further notes on school building there is a further flaw which, though a mere scratch on the surface of an admirable argument, may yet give occasion to the enemy to blaspheme. "True," it is said, "our modern school buildings are not usually mean or ugly. In London and other great cities at least, they are, as a rule, handsome and dignified. Yet none gives any impression of great beauty, because they are all alike, and beauty is impossible without individuality." So far, we are, as our readers know, entirely in agreement with our contemporary; who, however, reveals a weak joint in his armour of light when, momentarily forgetful that Wren built nearly all the churches after the Great Fire, he asks, "Why should there not be as much variety of architecture in schools as in churches? No two churches in London are exactly alike, though hundreds are built on the same general plan. Each church is a separate conception." This is sufficiently true, but unfortunately for the strength of the contention, it may be said to apply with equal force to the existing schools. No two of them are exactly alike. Nevertheless, their individuality is in no case conspicuous, because the trail of officialdom is over them all; whereas Wren was a genius, working with a fairly free hand, and seeing very clearly the need for such variety as one man may devise. Moreover, London churches, as we see them to-day, are the work of many architects, but this cannot be said of the schools; and we shall never get the desired diversity until the designs of schools are obtained in open competition. It is only in this way that we can hope to realise the aspiration recently expressed in the manifesto of the Workers' Educational Association that "school buildings and interiors should be designed with a view to developing the sense of beauty in the young."

\*       \*       \*       \*

It is an American poet who sings, "And things are not what they seem." For example, "pork" is something else. What pork is when it is not pork one can only guess. Many references to it are cited from the public Press in "The Journal of the American Institute of Architects," which we welcome monthly not from Chicago (which, we understand, has the unholy alias of "Porkopolis"), but from Washington, D.C. Thus we learn with respect to an "Omnibus Public-Buildings Bill" that there was a "pork-barrel combination back of the Bill"; that "friends of pork cry that Congress will never surrender its right to appropriate

public money for public buildings"; that "pork has not been propitious to architecture"; that "the Government ought to lead, but it does not—and pork is one of the reasons." We must confess that we find these porcine allusions somewhat baffling. They seem to make pork, or the friends of pork, at once beatific to building and inimical to architecture. Is this what is meant by a "pork-barrel combination"? It is not a rare phenomenon, this of the ardent builder who "makes pork" of the architecture; but our own familiar idiom does not illuminate the American use. We suspect—but this is mere guesswork—that the "friends of pork" are Congressmen who like to go back to their constituents with tangible and porcine proofs that local interests have not been neglected—perhaps they come off with Government grants for local buildings; but why a predilection for pork should be deemed unpropitious to architecture (except on some theory of nightmare design), or why pork *per se* should be a reason why the Government does not lead (unless it be that lethargy supervenes on pork-provoked dyspepsia), are esoteric mysteries with which the stranger intermeddled not.

## THE PLATES.

### *Cathedral of Kazan, Petrograd.*

THIS is one of the great buildings of the Classical period of Russian architecture. In design it is inspired by St. Peter's at Rome, the architect Voronikhine, having followed Bernini's model in the colonnaded wings which extend on both sides of the central building. Voronikhine was born in 1759 in a village of the Government of Perm, a serf of Count Strogonoff. The nobleman took an interest in the young peasant, who showed artistic inclinations, and in the year 1777 he placed him with Bagenoff and Kazakoff, the most celebrated architects of their day in Moscow. Count Strogonoff subsequently sent him to make the Grand Tour and to study the art of antiquity in Italy. In 1784 Voronikhine accordingly set out on his journey in company with the preceptor of the Count's son. While in Rome he studied painting, architecture, and various sciences, returning to Petrograd in 1790, where he became Professor of Architecture. He was selected by the Emperor Paul I. to design the Kazan Cathedral. He died in 1814.

### *Hutments for Munition Workers.*

These are dealt with in the article on page 155. Apart from their topical interest, the illustrations have a value as suggesting a new manner that might be adopted for rural housing.

### *A Canteen.*

The photograph shows what a good effect can be obtained in an industrial building when the design is well balanced in its parts and carried out in good materials. For plan, see page 157.

## PAPER ECONOMY.

FOR the past two weeks we have urged readers to aid us in economising paper by getting their Journal in one of two ways—either by placing a direct subscription for it, or by making a point of getting copies regularly from the same newsagent. It is obvious that if a reader buys his Journal here this week and there next week, newsagents cannot determine the exact number of copies they may want in any single week, and the result is bound to be waste in "returns" (*i.e.*, copies returned unsold). It is with the object of reducing this waste to the smallest possible amount that we ask every reader to follow the suggestion mentioned above.





MONUMENTAL ARCHITECTURE (SERIES II.), XI.—CATHEDRAL OF KAZAN, PETROGRAD.  
VORONIKHINE, ARCHITECT.



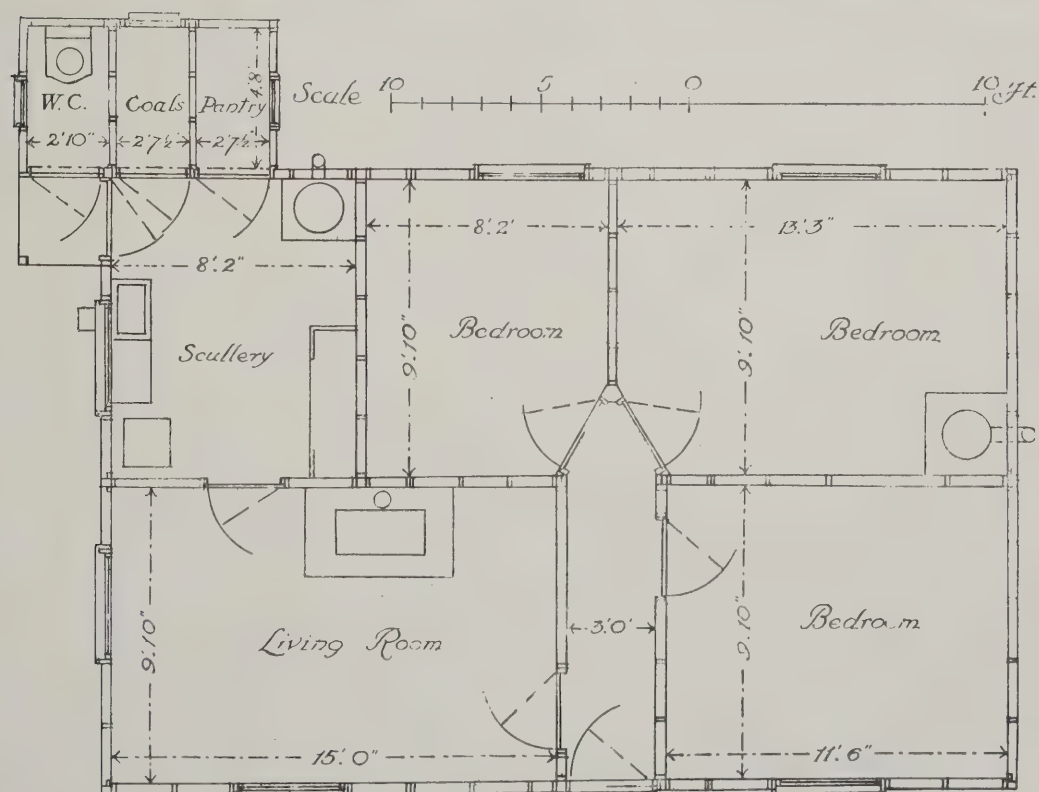




MODERN DOMESTIC ARCHITECTURE (SERIES II.). XLIX.—HUTMENTS FOR MUNITION WORKERS,  
WELL HALL, ELTHAM, KENT.  
(Building Dept., Woolwich Arsenal.)







MODERN DOMESTIC ARCHITECTURE (SERIES II.). L.—HUTMENTS FOR MUNITION WORKERS,  
WELL HALL, ELTHAM, KENT.  
(Building Dept., Woolwich Arsenal.)

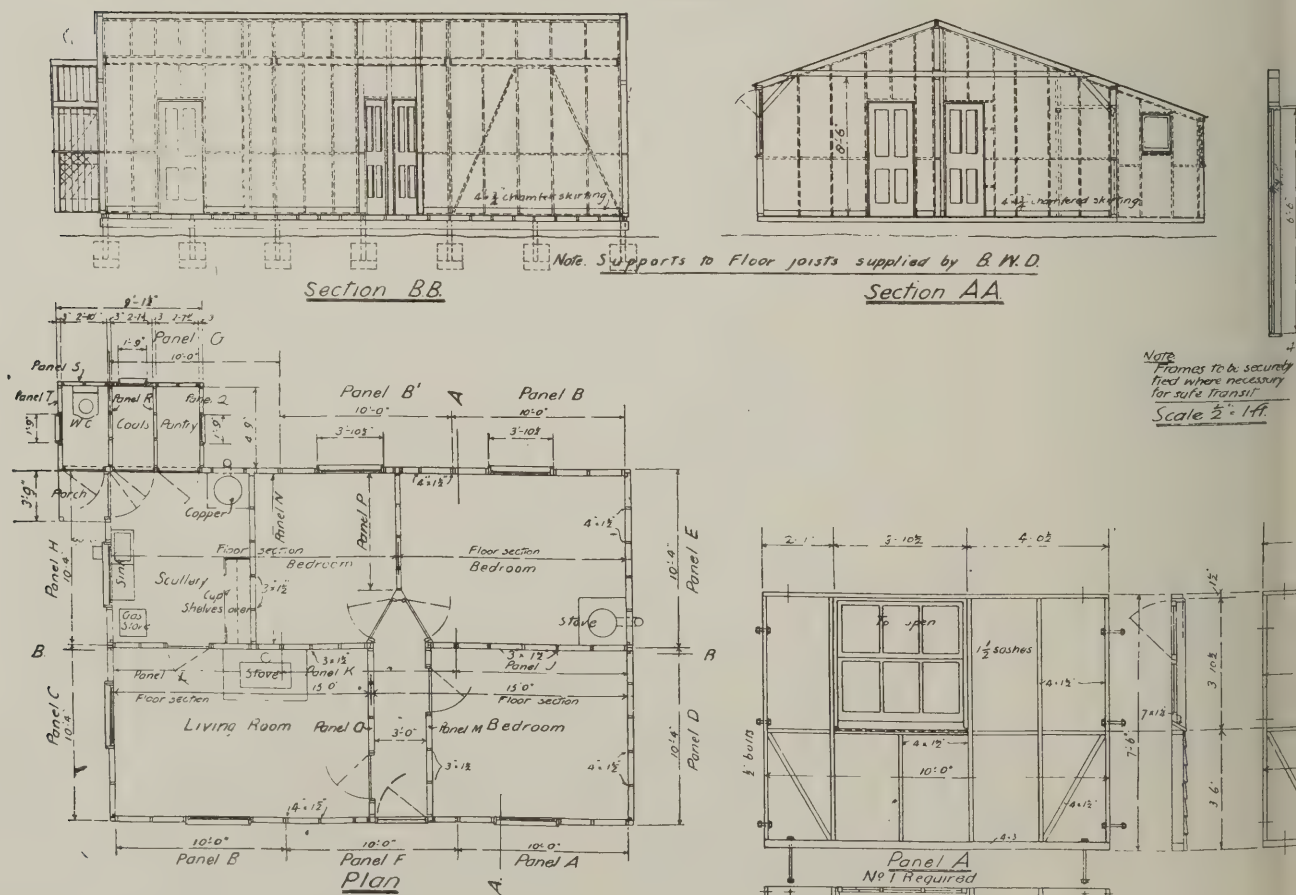
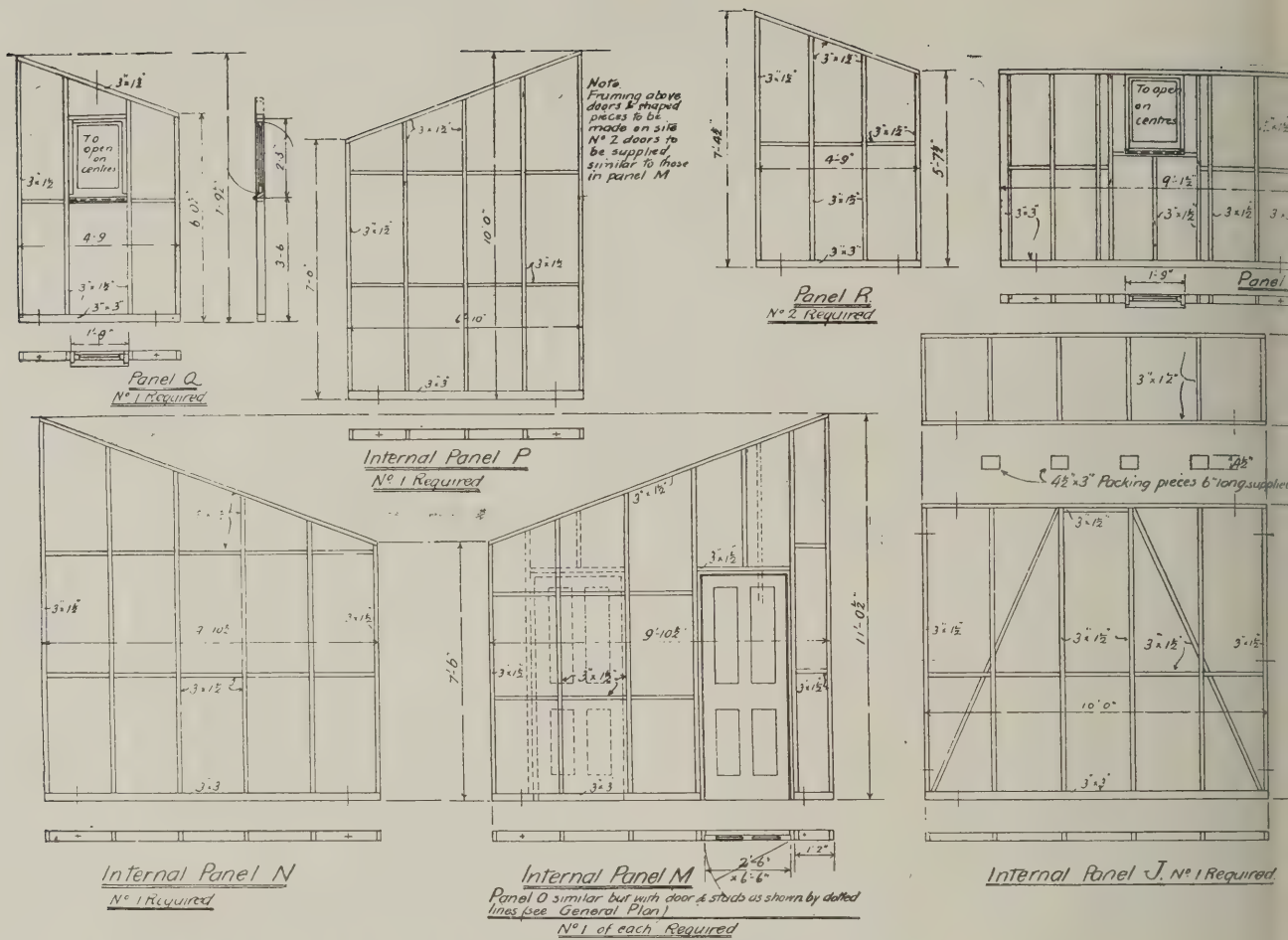




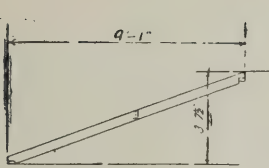
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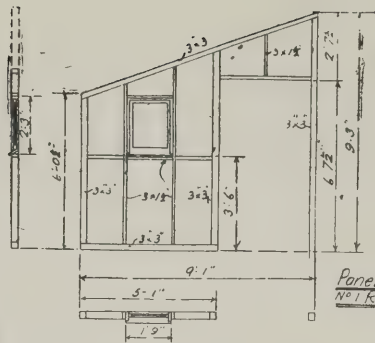
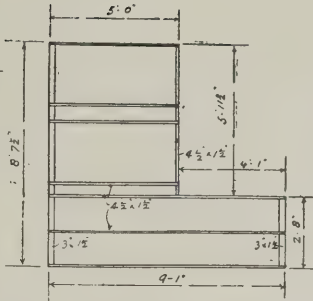
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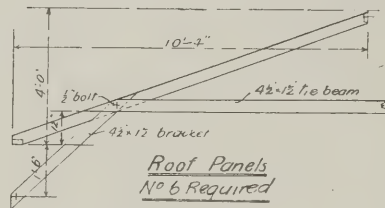
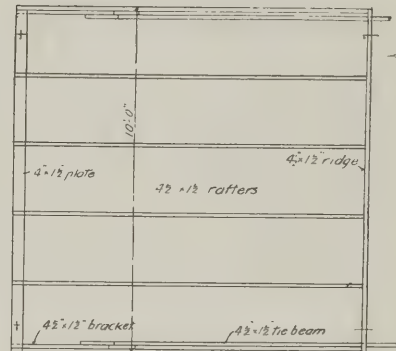
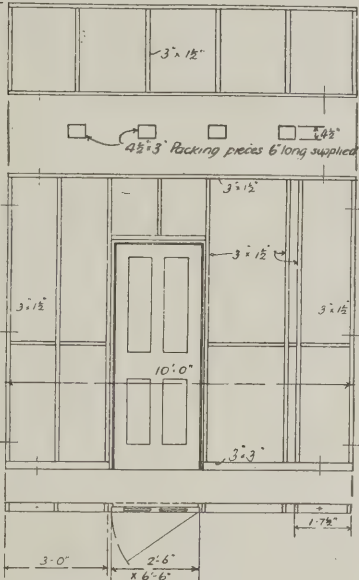
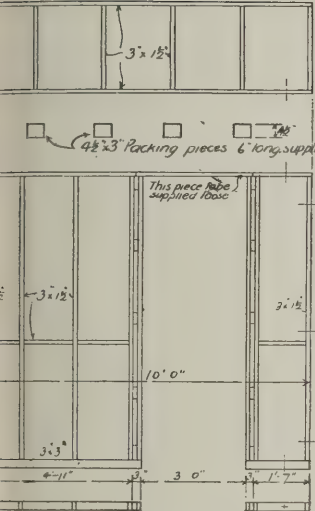




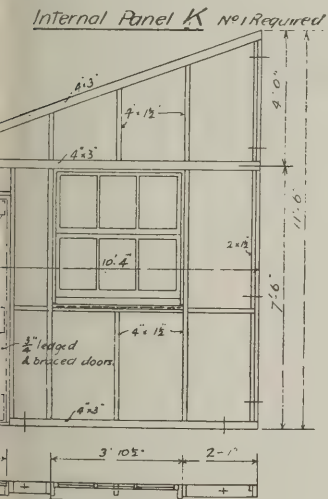
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Outbuildings  
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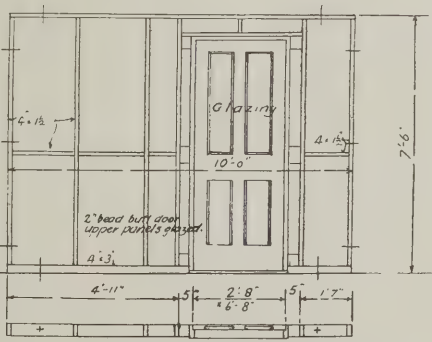
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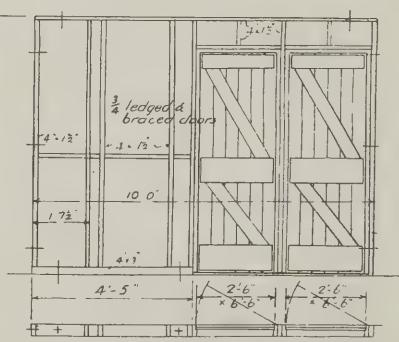
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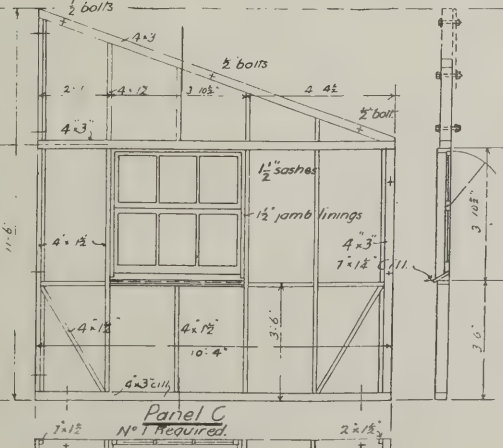
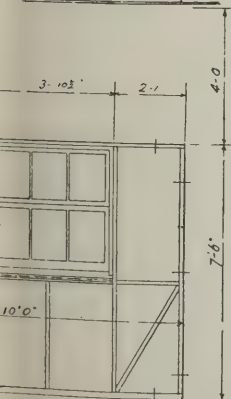


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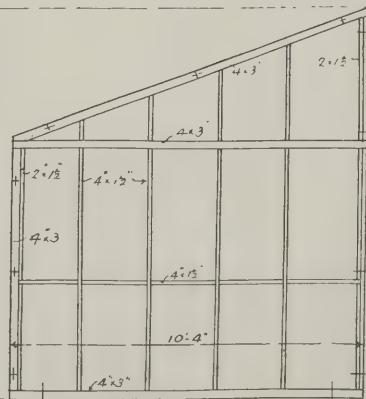


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Panel C  
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Panel D N<sup>o</sup> 1 Required

Panel E similar but on opposite hand N<sup>o</sup> 1 Required







MODERN INDUSTRIAL BUILDINGS. VI.—A CANTEEN.

A. ALBAN H. SCOTT, ARCHITECT.





## A CRITICISM OF MODERN ENGLISH DOMESTIC ARCHITECTURE.

IN some notes on modern English domestic architecture in the "Architectural Review" for March, "G. J. H." makes the following criticisms:—

"The country-cottage or farmhouse type, it must be admitted, has been rather overdone. An eminent architect once said there appeared to be a prevalent idea that, to design a house of any size whatsoever, it was only necessary to take the country cottage and blow it out! And there is really some ground for this criticism. We can call to mind quite large houses masquerading as labourers' cottages, with hatched roofs and rain-water butts complete.

"Another point that arises—one, indeed, which has been argued at considerable length many times before—is that these pseudo-cottage houses are often quite unsuited to the sort of people who have to live in them. That characteristic feature of the farmhouse, the ingle fireplace, which, to look natural, must be left with the rough bricks exposed to view, is scarcely the sort of thing which the modern business man wants to sit down and look at when he comes home in the evening after a hard day's work at the office. Yet this rustic feature is frequently to be found. Pewter mugs and candle-ticks adorn the mantelpiece, while bellows and warming-pans complete the picture. Anachronisms of this sort are no doubt amusing for a time; but they become very wearisome. The same criticism applies to the other distinctive features of the pseudo-rustic house. Living-rooms are left with the ceiling-joists exposed, and the mark of the adze is emphasised lest it should be overlooked. Doors also are very primitive pieces of work, consisting of plain boards nailed on to battens, imparting what is no doubt considered a desirable barn-like appearance. But, happily, there are signs that the cult of false rusticity has had its day.

"The type of work in which we have made the most welcome progress is that to which, for want of a better term, we have applied the generic description of 'Georgian.' While on the one hand there has been much frank copyism, and on the other a good deal of unfortunate 'originality,' we yet have to admit that many serious attempts have been made to avoid both pitfalls. Our younger school of architects in particular have shown us that it is quite possible to work in the traditional spirit without mere plagiarism, and at the same time to achieve a fresh and satisfactory result. In one sense we have witnessed something of a revolt against the obsession of design. There was a strong predisposition not so very long ago to concentrate upon detail, to the neglect of the larger considerations of proportion and mass. Thus, while all sorts of decorative trifles were receiving minute, even microscopic, attention, the house in its broad and general aspects was left to take care of itself. The result was petty and niggling work. The inevitable reaction has set in; and like all reactions threatens to go to a directly opposite extreme. To aim at good proportion and breadth of effect is no doubt the primary object; but to stop there with the idea that all is well is quite a mistaken policy. Large unadorned blanks of wall surface have their place in monumental design, but something more is required in domestic work. We do not want to go back to that kind of simplicity which is mere dullness. Not only is this sort of thing bad for the people who have to spend their lives in such houses, but it is bad also for architects, who are wilfully curtailing their powers of design. The middle course, which strikes between the two extremes, is the true one, and no doubt we shall follow it.

"To carry on the eighteenth-century tradition is by no means so easy as it may seem. To design in the vernacular style demands, in addition to ripe scholarship, a fine sense of proportion and of the general fitness of things. That these qualities are by no means common is evidenced by the detail of much modern work. Carved swags are often too large and lumpy; mouldings to panelling and friezes are too coarse; the egg-and-tongue and bead-and-roll become fat and heavy and unduly obtrusive, and so forth. Likewise it requires a nice discrimination to select appropriate motifs for interior decoration. We have long since ceased to quibble over the apparent incongruity of using essentially external features for internal decoration. The Renaissance introduced the custom, which has been ratified and upheld by successive generations of architects. But the practice is often carried to an absurd extreme."

Other articles of special interest in the March "Review" are: "Inigo Jones's Sketch-Book," by Mr. Gotch; "Boydell's Shakespeare Gallery in Pall Mall," by Mr. Arthur Stratton; "Rural Architecture in France," by Mr. H. Bartle Cox; and "St. Peter's, Rome, and a New Scheme"—this last article being accompanied by a plate illustration showing a wonderful view of St. Peter's and its surroundings, taken from a balloon or aeroplane.

## WILLIAM DE MORGAN'S TILEWORK.

IN view of the recent death of William de Morgan, a small loan collection of his pottery and tilework has been arranged in Room 132 of the Victoria and Albert Museum. In the present difficulties of transport, no attempt has been made to form an exhaustive, or even a representative, series of these wares—a number of the choicest specimens have been, as a matter of fact, detained in Paris since the Arts and Crafts Exhibition of 1914. The exhibits are, therefore, mainly confined to loans from residents in London and the neighbourhood. Mr. Halsey Ricardo has kindly assisted in the organisation.

Both types of de Morgan's productions are represented—namely, the ruby-coloured and silver-yellow lustre ware, emulating the Italian majolica of Maestro Giorgio, of Gubbio, and that painted in rich harmonies of blue, green, and purple, the so-called Persian colours, suggested in reality by the work of the old Damascus potters. The collection testifies to the late artist's wonderful fertility in the invention of designs, and proves that he fully understood the value of the art of the past as a stimulus to new creation rather than a repertory of themes to be slavishly copied.

The opportunity has been taken to show in the same room a small series (also kindly lent) of the stoneware made at Southall by the three brothers Wallace, Walter, and Edwin Martin (of whom only the first-named, the eldest, survives). This belongs, of course, to a very different category of the potter's art. Here the inventiveness of the artist is displayed in a great variety of form, always, however, strictly within the natural limits of the craft.

The exhibition is supplemented by a few examples of modern pottery and porcelain, both English and foreign, drawn from the permanent collections of the Museum. Amongst these may be specially named specimens of French stoneware by Jean Carriès, Delaherche, Bigot, Lenoble, and others, recently received by the Museum as a joint gift from Prince Antoine Bibesco and M. Paul Morand.

Even in a time of War it is well to turn aside for a while to study Art, and we are sure that very many people will make a point of visiting this display at South Kensington.



## A DISCUSSION ON SCIENCE AND ART IN ARCHITECTURE.\*

MR. REGINALD BLOMFIELD, R.A., presiding at the R.I.B.A. "informal conference" on "The Education of the Architect," said that the high level of competence in the rising generation of architects is largely due to their much improved training. He certainly thought that the younger men who are now practising architecture are very much better trained than was the case when the young architect had practically to find out for himself what he wanted to know in the best way he could.

Still, the organisation and the reform of architectural training which was brought about fifteen years ago, though it has done very well, could not stay there. We have to keep abreast of new conditions, new necessities, and we must modify and extend our training to meet these new conditions. One caution he would suggest, and that is, that though modern construction has made extraordinary strides in recent years, and though a great many new materials and new inventions have come into current use, with all of which students ought to be acquainted, yet there is no need, when we move forward, to turn our backs on the knowledge which has been acquired by many generations of hard training and serious study. What we have to do is to supplement that knowledge, to maintain the level of that training, but to associate with it a more thorough scientific training. Our students will have to get a grip of these new methods, on the lines that we laid down some years ago, and that must be developed.

*Mr. Robert Atkinson Opens.*

Mr. Robert Atkinson, head master of the Architectural Association's School, then read a paper from which the following extracts are made.

He looked, he said, upon architecture as an art of the future, not of the past alone. We are confronted with problems daily, such, for instance, as aeroplanes; temporary sheds house them at present, but in the near future they will need permanent buildings and landing-places perhaps in cities. An architect should be prepared for such steps in progress. By his training he should be able to foresee or anticipate developments; they do not come without warning, they are purely evolution, their trend is already settled, they need only courage and spirit for their solution, but they need different treatment to anything done before. Our ancestors were in a similar case, and they produced the beautiful solutions which we spend our lives in worshipping and copying, a spirit to be admired, but an almost useless exercise. Why should we not then move forward as they did; accept our conditions and our materials, use them, and perhaps produce beautiful buildings which will be in the true sense logical? We are richer in knowledge than our ancestors, richer in materials, in money; are we then deficient in courage, in enterprise, and in taste?

We are torn between our reverence for the past and our modern logical reasoning intelligence; invariably our ancestor-worship wins. How often do we see our modern materials used courageously and properly? What would not our worshipful ancestors have given for our steel, our ferro-concrete, our glass, our asphalt, our asbestos, and our hundreds of new materials?

Evolution has progressed recently by the square of its former velocity, with what result? Since the introduction of steel, tradition, which once kept pace with progress, has been hopelessly outpaced. What a pathetic breakdown was then witnessed! The engineer passed the plodding, conservative, hidebound architect on the wings of the wind; he produced bridges and railway stations before the bewildered architect could collect his instruments or mount his paper. The engineer showed his naked steel—the architect persisted in hiding it—it was not a traditional material. Palladio or Batty Langley was searched in vain; what could one do with these attenuated proportions? Result, chaos!

Since that day the architect has never kept pace with his materials; he periodically puts on a spurt to find that the materials he has just conquered are superseded by new, and, like the dog tied behind the express train, prays for a collision.

A partial solution of all these problems lies in the *training of the architect*; unfortunately, were we to begin to-morrow, it would still be five to ten years before the result became apparent. I stand then confessed as a supporter of logical training; but how to accomplish it? By training I mean, of course, the *beginning* of training, for an architect is a lifelong student, *but the beginning is the part which matters*; the first impressions, the glimmering outlook must be the corner-stone, if years, and perhaps lifetimes, are to be saved. This outlook depends primarily upon the ability of the master, but within certain limits a generally similar outlook can be arrived at, first, by the education of the *masters*, and, secondly, by *their* work amongst students.

It is important then to settle in definite terms for the master's guidance an outlook of the broadest possible character and arrange programmes of education which can immediately be put into force; not narrow-minded courses, but courses open to temperament and capable of constant improvement.

Architecture, I am aware, is a complex subject—its side issues limitless, its study fascinating—and life, after all, is very short; but we have men of experience willing and able to save the student useless toil and to give him the benefit of their experience—so only can evolution take place—by enabling each generation to begin on a higher plane.

I disagree entirely with many of the present methods of teaching—the system of dividing into watertight styles, the divorce of historical architecture and construction—by such methods a student is accustomed to look upon the styles as separate periods beginning at a given date and stopping at a given date, as if history were like the turning on and off of a tap.

Historic architecture is part of the life of its particular period, the influences of daily habits, the capacity or intellect of the people, the materials in use, the methods of construction, and the influence of all these things on the architecture. Teaching should show whether the architecture (design) is deliberate, or dictated by the materials and habits of life. These are of more importance than a string of names, of dates, of dimensions. Of what use is it to know all these things without being able to analyse them? To pick out those that are useful and those that are not, and to be able to apply the result to modern problems, this essence of analysis is the faculty which will solve our modern difficulties.

With planning it is the same thing—we do not study ancient planning for its dimensions—we wish to learn to analyse, to see how the forms of roofing dominated the spacing and shape of rooms, whether the roofs be flat, domed, vaulted, or columnar, to see why axial lines are maintained and why adopted, to see if parallel axes are good or harmful, to see if paralling the largest rooms have the thickest walls and rise up to a greater height, the use of climax and anti-climax, to see if internal massing dominates external massing, and when external grouping was first developed.

Then follows the grouping of separate buildings, their connection, the domination of the more important, their approaches and the study of the points from which they will be viewed, the deliberate confining of spectators by walls or obstructions to the vicinity of the points of view desired.

Again, with historical construction, how can this be forcibly extracted from its setting, set down in text-books as average diagrams, copied faithfully by students and advanced as evidence of knowledge?

What part of *historical* construction except, perhaps, masonry and brickwork applies to modern construction? (Domestic buildings excluded.) Very little. How much of this old construction is obsolete? All but the more simple part of it, at any rate. Who ever uses queen-post roof trusses? Why not then teach historical architecture and construction as one subject and begin *modern construction* on the foundation thus provided?

Let *expression* be a part of our modern construction; let the use of the building be it library or warehouse, be *expressed* by its appearance and its materials. Why should a steel-framed or ferro-concrete building be clothed like an Italian palace or a Roman temple? Simulating ponderosity on a slender framework; why waste the client's money and floor space? Why load a framework with unnecessary weight? Why blot out the precious daylight with simulation rustications? Why not live the life of the occupant for a few days and learn what *he* considers a good building for his business?

The architect always has a tendency to lock himself up with his books when he prepares his design; why not go out and see life? I mean the life of the intended occupants, the poor devil who has to pass his life in a room with a small window either on the ceiling or on the floor, or perhaps even sharing it with another poor devil in another little room. Books are certainly the foundation of an architect's knowledge, but they must be *used, not worshipped*. Draughtsmanship is another point. There are people who say that the good draughtsman has spent so much time in perfecting his art that he has had no time to learn anything else. Draughtsmanship is certainly a great help to the architect. It is easier to visualise a building from a good drawing than a bad one, and when not abused the projection of shadows and rendering is invaluable in finding the correct massing of parts and the correct weight and projection of ornaments—always, of course, allowing for that elusive element "taste." My own experience of students is that the best perspective hand is usually the most prolific designer and the best at the handling of masses, his faculty of "*seeing all round*" being more highly developed than that of his fellows.

I quite realise that the plodding person

\* Condensed from the "R.I.B.A. Journal" report of the second informal conference.



the backbone of the profession. For that reason I think it would be a great injustice to raise the standard of the examinations to too high a level. It would be better to award post-graduate diplomas for, say, design, town-planning, scientific research, or specialised subjects; these would tend to the continuation of studies in the particular line of each student and get rid of the idea now prevalent that once the Final is passed the goal is reached. Combination in business, too, might be encouraged more than it is; very often a particular person's lack of success is his lack of business ability or some one-sided reason. Why not, as in America, have three or four partners, each a specialist in his own line?

#### *Mr. Munby on Scientific Groundwork.*

Mr. Alan E. Munby, M.A., at the instance of the chairman, read a report he had been asked to make to the Board of Architectural Education with reference to the meeting of Public School Science Masters held at Eton at the beginning of January, under the presidency of Dr. Turner, Professor of Astronomy at Oxford.

Mr. Munby expressed the opinion that the Royal Institute of British Architects should endeavour to come more closely into touch with our well-known schools, with a view not only of assisting the education of boys destined to become architects, but, by making the profession of architecture better known and understood, help to draw its students from the ranks of the Public Schools to a larger extent. That much more science is required in an architect's training, if modern structures are to continue to be within his province, will, Mr. Munby said, probably be admitted, and much of this knowledge might be obtained at the Public Schools were the Board's Examination framed to require it and made more widely known.

#### *Laboratories for Builders.*

Mr. Hugh Davies, of the Board of Education, said that the Board of Education had just issued a Memorandum, dealing with the teaching of building subjects in technical schools, which would no doubt be of interest to those concerned with architectural education, especially on its scientific side. He particularly instanced the suggestions contained in the memorandum regarding the establishment, equipment, and organisation of building laboratories for instruction in the scientific principles of building and for experimental work on all kinds of building materials, brick, stone, limes, cements, wood, etc. The idea of these building laboratories would not be a new one to architects. In a highly interesting address given to members of the Institute on the establishment of the Institute's Board of Architectural Education in 1904, the present chairman, Mr. Reginald Blomfield, urged the need of such laboratories for the instruction of architects' pupils. [The Chairman: The idea belonged to Professor Lethaby.] It was to be hoped that these laboratories would be established in every important centre of building education, and that they would be used not merely by class students but also by practising architects who wished to carry out investigations on local materials or to conduct research on matters of building interest. The Board's memorandum also dealt in detail with complete schemes of instruction in building and included many suggestions on matters such as those being discussed by the present conference.

#### *Architecture as an Art.*

Professor S. D. Adshead proposed to submit a few remarks which might help to remind us that architecture is an art, and

in its highest aspect a fine art and the mistress art. He held that architecture is not based on construction, on the spacing of stanchions, on the jointing of girders, on the depth of beams, and the spans of trusses. It is a medium of emotional expression giving utterance to phases of the fancy, arrived at like all the arts by processes of suggestion. It suggests phases of human thought, aspects of mind, conditions of temperament, states of conscience, and particularly such as bind us to this earth. And construction is nothing more to architecture than the peculiarities of paper and pencil are to the draughtsman. Construction merely controls the method and defines the medium of expression. It has nothing to do with the thing expressed. The Parthenon, the Pantheon, Genain's Library, the Pont Alexandre, Paris, and the spire of Salisbury Cathedral are not only pieces of construction æsthetically expressed, they are much more—they are imaginative conceptions submissive to the limitations of the material of which they are constructed, and therefore it is my view that at the outset of a student's career he should be taught that architecture is akin to the fine arts, that, like painting, music, and sculpture, it is an emotional art, and that the kind of emotions which it can arouse are closely related to those which are aroused by reference to history and tradition; that being more dependent for its expression upon material than are painting and sculpture, construction and a knowledge of construction are absolutely essential to its practical realisation.

#### *Science and Art Not Antagonistic.*

Professor Lethaby said: I feel that it is false to set up an opposition between science and art at all in these matters. What should be meant by science is generalised or theoretical knowledge or preparatory knowledge, going very far. But science, in its application, is an art, such as the building art. The knowledge preliminary to the laying out of a great bridge, the knowledge of metals and of stresses, is science; but the putting it into operation, the building of the bridge or of the battleship, is an art. It is mere obfuscation and obscurantism and everything bad, this suggested opposition between art and science. I would make the teaching of architecture wholly science. When that comes to be applied, it will become an art. By saying I would make the teaching of architecture wholly scientific, I do not mean the learning about the science of geology, for instance, but I would attempt to set out the real science of building; the exploration of the possibilities of planning through an architectural geometry, and that sort of thing; to know the possibilities of designing through the mechanical necessities of structure, and so on. I would allow no taste to come in in teaching. Some day we shall come to realise that we have been dealing with a contradiction in terms, for all teaching is scientific; you can teach nothing but science, and to teach science is to open the way to art and temperament, to taste, or whatever you like to term it. It is always there, and it will always come in. You are giving the man the means, and nothing else should be taught but science. We had a very interesting, competent, and remarkable Professor of Painting visiting this country from Brussels, and he said exactly the same thing about the teaching of painting, that they were coming to the conclusion in Brussels that what should be taught was the science of painting, and that the artist had the rest of what was required in himself; he had temperament,

genius, or whatever you like to call it. They had come to the conclusion that it was their business to teach the science of painting. In the same way, I think, we shall have to come to the conclusion, some day—it may be twenty years, it may be 200 years hence—that the only thing which can be taught in architecture is the science of it, science all round; geometry as applied to it, mechanics as applied to it; but that does not ignore the question of the art, or the temperament, or the genius; it opens the way to those qualities.

Invited by the chairman to speak, Mr. F. Roscoe, secretary to the Teachers' Registration Council, said the assumed conflict between science and art is one which has troubled men from the earliest times, and we have to determine how much, if at all, the study of science is of direct help to the artist. In Herbert Spencer's book on education in which he advocates the teaching of science, he refers to the well-known statue, the "Discobolus," and says that if the sculptor had possessed a rudimentary knowledge of science he would have known that after throwing the disc the man must inevitably fall to the ground; but Herbert Spencer probably overlooked the fact that on releasing the disc the athlete would have moved his foot and so have preserved his balance. The artist knew this and was not thinking solely of the mechanical science. Mr. Roscoe suggested, "although with diffidence," that sciences never generate arts out of themselves. Science is organised knowledge. You can work backwards from art to science, but you cannot work forward from a science to an art. He agreed with Professor Lethaby that in the relation between science and art everything depends on the artist. He submitted that the scientific training which does, of course, underlie every art, must never be undertaken except in constant relation to the actual art which is contemplated. Examinations should follow the curriculum, and not determine it. You must decide what is the best training for an architect, and make the examinations fit the training—not make the training fit the ideal examination. If you think too much of the science underlying the art and the craft of architecture, your examinations will have too much science in them, and the training will have too much of it, too; the training will be insulated from the reality of the art itself. The value of science, in any form of training, is strictly limited; it is limited by its immediate applicability to the purpose involved. And, further, he thought the continued interest and zeal of the student largely depend upon his appreciation of the continued applicability of what he is learning at the moment, the purpose in his chosen calling. He was against teaching detached science.

#### *The Beaux-Arts Course.*

Sir John Burnet said: It is our first duty to be intelligent citizens, keen and sympathetic students of the requirements of our time. To this end it seems to me a higher standard of general education should be required of our students before they enter upon their architectural studies. I thoroughly appreciate what has been said in reference to the Ecole des Beaux-Arts, and the system of monthly "projets" which form the background of the course of study there, but as one of the few students from this country who committed themselves to the whole course, I would like to express my belief that these "projets" are intended to indicate to the student the part that arrangement-of-plan plays in his "art," and that he may appre-



ciate how far he has profited in design by the study of those books illustrating the subject which are available to him, and, along with his drawings from the cast and his modelling, are together exercises in design and technical methods of expression. The more important part of the course seemed to me then, as a student, and still seems to me, to have been the lectures to be attended on History, Higher Mathematics, Stereotomy, and Construction, with their final written and oral examinations, the failure to pass in any one of which meant being "sent down" for a year, and the satisfaction and enthusiasm with which each student entered upon his final "project," the "Projet of Construction," which indicated his progress alike as a designer and constructor, and enabled him to pass into the first class, showed, I think, that others held the same opinion. It is the lectures, and drawings made for them, and the examination before and after the "Projet of Construction" that teach the student his craft. The "projets," drawing from the cast, and modelling, are all influences, the power of which, like the books he studies, his fellow students in the studio, and the distinguished architect in whose studio he works, must always depend upon the nature of the student, and his ability to profit by them. The first makes it possible for him to practise the craft of architecture. The second affects only the way he does it; if the second course is earnestly followed his work should bear the stamp of "culture," or it may be of "genius."

I do not think the standard of the Royal Institute is high enough; it should have the highest ideals in education. I think the standard should be much higher and yet give a man no further education than he needs to make him a respected member of the profession. Whether it should be in the form of post-graduate study or not I do not know, but I would like to see some element in the course which passed the student into the University, it might be by way of a diploma, or an honours course; or the student might take his B.A. or M.A. with an arts subject before entering as an architectural student; some method by which our education would be not wholly dissociated from the education of other professional spheres. In that way other professions would know what it meant to be an architect, and our work and our responsibilities would be better understood and appreciated by the public and our advice more generally sought.

#### *When Engineers Consulted Architects.*

Mr. A. E. Richardson, referring to remarks made by previous speakers concerning the functions of the architect being usurped by the engineer, points out that in the Victorian period the engineers very eagerly consulted the architects on questions of practical utility. When Dobson was designing the Central Station at Newcastle the engineers were in a quandary regarding the curve in the main line; they appealed to the architect, who adjusted the railway tracks for them and incorporated the rails into his scheme for the station. The engineers were not churls, and acknowledged their obligation to the architect's taste. Philip Hardwick was advisory architect to the London and Birmingham Railway, Maccata to the London, Brighton and South Coast, Sir Gilbert Scott to the Midland, for whom he designed the grand iron vault in collaboration with an engineer, and Mulvany and Sancton Wood both advised the railway companies in Ireland. This is proof of the fact that the practical mind is not always capable of hitting off the most fitting solution of a mechanical problem.

## LEGAL.

### **Architects' Claim for Fees.**

#### *Barrett v. Enfield Electric Cable Manufacturing Co., Ltd.*

March 13. King's Bench Division. Before Mr. Justice Ridley.

This was an action in which Mr. Herbert Stanley Barrett, practising as Messrs. Stanley Barrett and Driver, architects and surveyors, of Gray's Inn Chambers, Holborn, W.C., claimed from the Enfield Electric Cable Manufacturing Co., Ltd., of Brimsdown, Middlesex, £115 10s., for goods due to plaintiff and work done as an architect.

Mr. Hawke, K.C., and Mr. Dobb appeared for plaintiff, and Mr. Schiller, K.C., and Mr. Henriques for defendants.

Mr. Hawke stated that the action was really for breach of contract. Plaintiff claimed first an amount of £10 10s. for work done as an architect and surveyor in assisting the defendants in a dispute they had with the firm of Messrs. Brownlie and Murray. Defendants admitted that he did the work and ought to be paid for it, but they said he had really been paid, because he had received £10 10s., but owing to an error in the letter in which it was sent it was stated that it was payment for another job in connection with the erection of a works manager's house. The main part of the claim was for fees for the preparation of plans for a new factory at defendants' place at Brimsdown. Defendants' case was that plaintiff undertook to prepare the plans and do all necessary work on terms similar to those on which he had previously done work for Viscount Grimston in connection with the building of a factory at St. Albans. These terms were that unless the plans were accepted and the work carried out plaintiff was to be paid nothing. There was no dispute that plaintiff did the work. He prepared designs which were approved, got out plans and obtained tenders. On March 4 defendants decided not to go on with the work, and wrote to plaintiff on March 5 telling him so. On that defendants contended that plaintiff was not entitled to be paid anything. The terms on which plaintiff had previously done work for Lord Grimston were that plaintiff was to prepare plans for a new factory at St. Albans. If the work was proceeded with he was to be paid for the whole work, but if not he was to receive a certain amount for preparing the plans.

Mr. Barrett gave evidence bearing out counsel's statement. He said it was agreed that he should receive 5 per cent. remuneration for his work. No suggestion was ever made till now that he was to be paid on similar terms to those on which he had done work for Lord Grimston.

After plaintiff's evidence, his Lordship said he could see no answer to plaintiff's claim.

Mr. Henriques said defendants' case was that a verbal agreement was made between plaintiff and Lord Grimston at St. Albans by which plaintiff was to prepare plans at his own risk. If the work was afterwards carried out he was to be paid for his services; if not, he was to receive nothing.

His Lordship remarked that this defence seemed quite hopeless in face of the letters and documents.

Mr. R. D. Hampson, district surveyor of Kensington, also gave evidence.

For the defence Viscount Grimston said plaintiff in an interview, undertook to prepare plans for a new factory. Plaintiff was eventually entrusted with that work

on the terms of 5 per cent. if the work was carried out, and a payment of £50 if it was not. Early in 1915 witness asked plaintiff if he would be willing to do the architect's work in connection with the factory at Brimsdown on the same terms as he had worked for witness. Plaintiff agreed to do so. The arrangement was "no work no pay."

At the conclusion of the lunch interval Mr. Hawke announced that a settlement had been arrived at. Defendants had agreed to submit to judgment for £105 to include the ten guineas paid into Court, with costs on the High Court scale.

His Lordship directed judgment to be entered accordingly.

### **Architect's Fees for a Model Bakery.**

#### *Bethell v. Page.*

March 21-22. King's Bench Division. Before Mr. Justice Ridley.

This was an action by Mr. Frank Bethell, an architect, of Queen Anne's Place, Bushill Park, Enfield, claiming £233 10s. from Mr. F. W. Page, of Gordon Road, Peckham, for architect's fees in relation to the erection of a model bakery at St. Aidans Road and Forest Hill Road, Forest Hill. The defendant, it appeared, was in 1913 and 1914 contemplating the construction of model bakeries on a site at Forest Hill, and he approached the plaintiff in regard to the scheme, the estimated cost of carrying out which was £4,670. According to plaintiff a verbal and implied contract was made between them that plaintiff should prepare the plans, etc., and be paid 5 per cent. on the building cost for so doing. The plaintiff accordingly prepared alternative plans and working drawings, with draft specifications for a building consisting of a bakehouse, cooling-room, offices, mess-room, flour store, stables, forage store, general stores, and loading shed. The building was not, however, constructed in accordance with his plans.

The defence was a denial that the plaintiff had rendered the professional services alleged or that there was any agreement made between the parties as to the amount of remuneration to be paid. Defendant said that he did not employ the plaintiff as an architect or that he had in any way made use of the plaintiff's plans. He said, further, that a reasonable remuneration for preparing the sketch plans was ten guineas, which amount he brought into court.

Plaintiff was examined at length as to the circumstances which led up to the agreement between the parties and upon the plans which he had prepared.

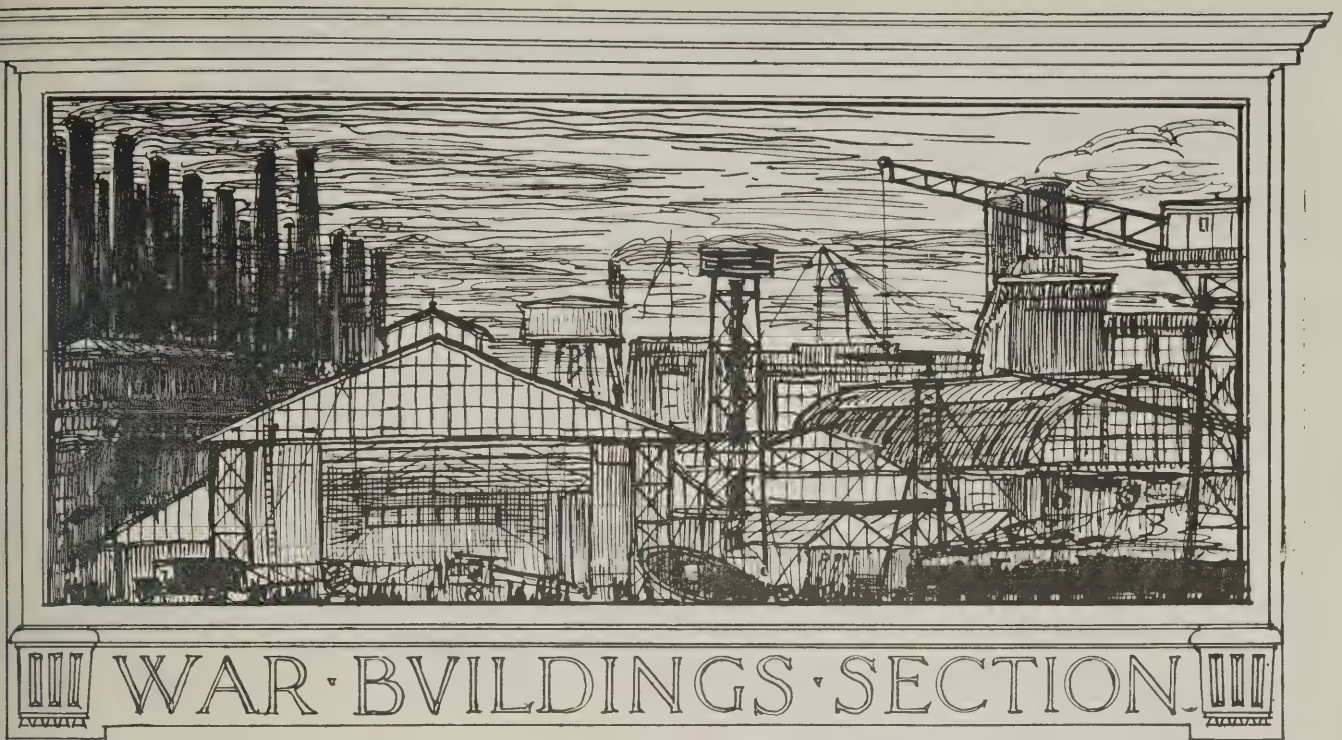
After an adjournment his counsel announced that the parties had arrived at a settlement and that plaintiff should have judgment for £100, with costs.

His lordship, in entering judgment for plaintiff for £100 and costs, said that the plans made a very strong case against the defendant.

### *Mr. Muirhead Bone's War Drawings.*

Mr. Muirhead Bone's recent drawings in France are being reproduced by authority of the War Office under the title of "The Western Front." In addition to this publication, a selection of drawings will be reproduced on a larger scale (20 in. by 15 in.) to give full effect to the artist's work. "War Drawings" will consist of a series of parts each containing ten illustrations. The drawings will appear as nearly as possible in facsimile, printed in one, two, or more colours, according to the character of the originals. It will be possible to obtain separate plates from this publication.





## HUTMENTS FOR MUNITION WORKERS.

AMONG the many problems created by the huge increase in our munitions output has been that of providing suitable houses for the many thousands of workers who have been drafted into certain districts, and for whom there was no possibility of finding accommodation in existing houses. The occasion being largely of a temporary nature, it was neither feasible nor desirable to build for permanent occupation. At the same time, as the occupation was considered to extend over a period of some years it was necessary that the houses should be absolutely weather-proof and well equipped. In connection with Woolwich Arsenal the Office of Works built on a large estate at Well Hall a colony of permanent houses of very admirable character (which colony was fully described and illustrated in our Special Issue of December 27 last). But there have also been built by the Building Works Department of the Arsenal (under the direction of Lieut.-Colonel Hemming) some thousands of temporary hutments, which are of equal interest, for they are not only of a very agreeable appearance, but are so planned as to provide rooms of an astonishingly good size, considering the limitations under which they have been designed and constructed. On our plates this week we reproduce some photographs of these hutments, as well as a detail drawing showing the manner in which they are built up, which illustrations, we think, are worthy of very careful study, as the hutments seem to us to offer a type that might very well be adopted for rural housing. The interior view which we reproduce does not represent a typical interior in so far as its furnishings are concerned, but it shows what can be done when the occupant is a person of good taste.

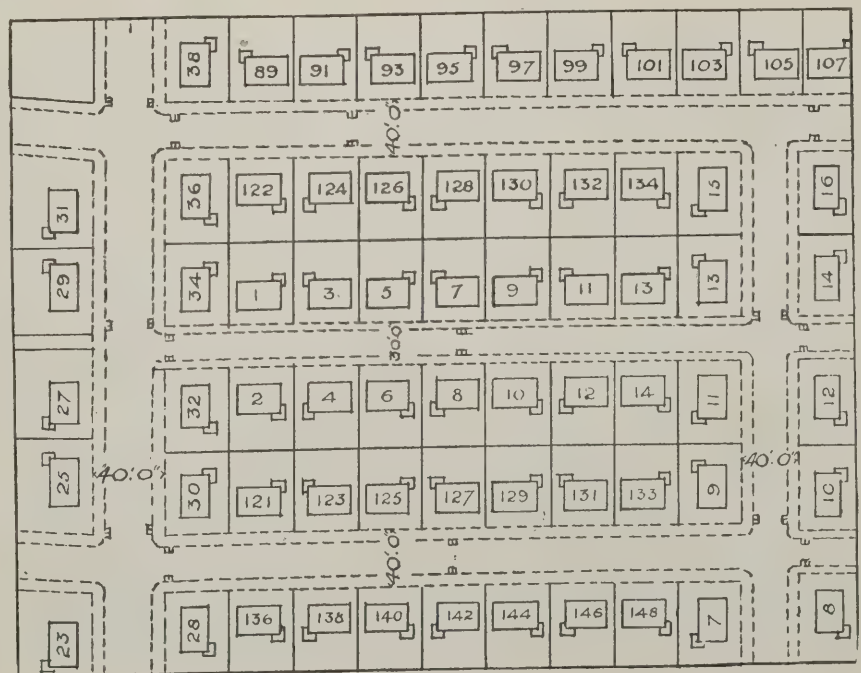
The accommodation comprises a living room 15 ft. by 10 ft., fitted with a dresser having shelves and cupboards, and a small coal range having an oven and a boiler on

either side of the fire-grate; three bedrooms respectively 11 ft. 6 in. by 10 ft., 13 ft. by 10 ft., and 10 ft. by 8 ft. (one of these is in some of the hutments treated as a "parlour"); scullery, fitted with a gas cooker, sink, copper, and bath with cover; pantry and coals—opening into the scullery; and w.c., next to the side entrance.

The hutments have a timber framework upon timber posts embedded in concrete. The exterior in most cases is covered with weather-boarding, but in some cases asbestos sheeting is used instead for the

upper portion above sill-level, with wood fillets covering the joints. Both types are shown on our plate. The majority of the hutments are lined with "Poilite" asbestos sheeting. The roof is covered with  $\frac{3}{4}$ -in. rough boarding on spars at 2 ft. centres, the waterproofing material being either 1-ply "Ruberoïd" or tarred felt.

The construction of the internal partitions varies; some are of timber framing covered with asbestos sheets, while others are solid slab partitions, constructed of breeze concrete, sand-lime blocks, or hollow tiles; in the case of the hutment of



BLOCK PLAN OF PART OF SITE SHOWING DISPOSITION OF HUTMENTS.



which we publish an interior view, tile partitions are used, simply distempered over, producing a very excellent result. All the studs and spars are spaced at 2 ft. centres to avoid waste in the asbestos lining, which is supplied in sheets measuring 8 ft. by 4 ft.

The whole of the timber framework was constructed in panels and bolted together in place, thus enabling the hutments to be taken down and re-erected elsewhere at a comparatively low cost. (We have heard the suggestion that after the War they are to be taken over to France and Belgium to serve as temporary housing accommodation whilst the devastated areas are being rebuilt.)

The weather-boarding has been stained a brown colour with "Solignum."

The block plan appearing on p. 157 shows the general lay-out of a portion of one of the estates on which these hutments are erected. From this it will be seen that each hutment stands upon its own plot, measuring approximately 55 ft. by 45 ft., whereby the fire risk is minimised as far as is possible with this class of construction. Every sixth hutment is provided with a fire extingisher, and numerous fire-alarm calls have been fixed.

As regards cost, it would serve no purpose to give any figures on which to base a general estimate, as these hutments were erected under War conditions; at high pressure, and a great amount of overtime was worked.

The rents are 10s. per week, inclusive of rates, taxes, etc.

## CANTEENS FOR WAR WORKERS.

### —III.

IN two preceding articles on canteens for War workers which have appeared in our issues for February 21 and March 7 we have dealt with the general considerations that determine the planning and construction of these essentially modern adjuncts to factories. To the information already given may now be added the following particulars:

The kitchen should be situated as centrally as possible with regard to the

dining-room, which it should adjoin. The wash-up or scullery should open out of the kitchen and should abut immediately upon the main dining hall. A counter or shelf with communicating hatch should be provided to admit of dirty crockery being handed direct to the hot-water sinks. In addition to the sinks in the scullery, such accommodation is also required in the kitchen for the use of the cook in the preparation of food. The sinks should be supplied with hot water from an independent boiler, which should be placed as near to the sinks as practicable.

With regard to the ventilation and lighting of canteens it may be noted that ample window space (with a large proportion of the windows opening) is desirable, and in no case should the total glass area of the windows be less than one-tenth of the floor area of the various rooms in which they

occur. Fanlights of casement windows should be hinged at the bottom to fall inwards. Glazed cheeks or gussets should be provided to admit of continuous ventilation, and at the same time prevent down-draught. All casement windows should be made to open for use in warm weather, and to flush the rooms with air after the principal meal is over. Louvre ventilators under the roof or in turrets provide ventilation for the main mess room. A simple cord attachment to wooden flaps should be provided to allow these ventilators to be closed during cold or windy weather. The kitchen should be provided with a continuous louver ventilator, and it is desirable, where electric or other power is available, that an exhaust fan should be fixed to extract the heat and steam from the kitchen and scullery, and incidentally to assist in the general ventilation of the dining rooms. Larders should face north and have nearly half the glass omitted in the window panes, perforated zinc panels being substituted to provide suitable ventilated storage for perishable food.

It is most essential that there should always be a plentiful supply of hot water through the sink taps for washing up purposes. This can be supplied from a (1) circulator boiler connected to a storage system, a (2) large hot-water geyser, or a (3) separate boiler over each sink. The choice of apparatus is by no means limited, and has been of late greatly extended by very convenient and highly economical adaptations of gas to such purposes.

Speaking of the modern adaptations of gas, it may here be usefully added that the small gas-heated destructors for household refuse which have been recently introduced seem to be particularly serviceable for canteens and camps. They are fully described in a special article in the current issue of "Specification."

We publish on this page two views of a scullery and a store in a canteen (for which illustrations we are indebted to the Canteen Committee of the Central Control Board, Liquor Traffic). We also show a plan and photograph of a canteen which has quite recently been erected from designs by Mr. A. Alban H. Scott; the plan is given on the next page, the photograph of the exterior being reproduced as a plate.



CANTEEN SCULLERY.



CANTEEN STOREROOM.



## NEW MATERIALS FOR WAR-TIME BUILDINGS.\*

BY H. D. SEARLES-WOOD, F.R.I.B.A.

WHEN the Committee asked me to open a discussion on this subject I understood that at these discussions we were to deal with actualities, therefore I started by making diligent search for the new materials, and found, as a result, that there were no new materials that could by any stretch of the imagination be capable of influencing design. I therefore made a search for new methods, and probably owing to the distraction of the War I found very few methods that could be called new, and none that were of sufficient importance to affect design. The following is what I found. The new materials were corrugated asbestos struts, which are used as a substitute for corrugated galvanised iron, and, owing to the great difficulty in getting any galvanised materials, may have a future, but can hardly claim artistic merit. There are various new processes for waterproofing concrete, which are useful, but do not affect the æsthetic treatment of concrete.

*Foreign Hard Woods.*

There is a Committee sitting at the Imperial Institute to interest architects and builders in woods from India, Nigeria, and the Colonies; these woods are nearly all hard woods most suitable for joinery and furniture, but having regard to the difficulty in obtaining steel some of the cheaper hard woods may be used in place of steel for stanchions and girders. The new methods I found were Mr. Isaac Shone's "cuncta in unum" system of house drainage that has a certain æsthetic value, as it reduces the macaroni like decorations that the plumber inflicts on our designs under the plea of sanitation. I believe this system has a great future before it, but it wants energetic pushing, as it is novel to the existing teaching and practice of sanitary experts, and the methods that the

public has been taught to consider as the very gospel of hygiene.

The development of central heating, that is, the delivery of hot water to dwelling-houses for all sorts of purposes, as gas and electricity are now supplied, appears to be a business proposition, and if logically carried out might go some way to settle the domestic servant difficulty, and would result in important modifications in house planning in towns. But I could not find any description of any place where it had been put in actual practice, though such buildings as the Liverpool Hospital, where central heating is largely developed, show what the possibilities are.

*The Cement Gun.*

In America and Canada a device called a cement gun is being largely used for exterior stucco and interior plaster work. In principle the cement gun consists of two superimposed tanks, in the top one of which are dumped the dry materials constituting the mortar. From the bottom one the dry mixture is ejected by compressed air through a hose line with a nozzle at the end. To this nozzle a second and smaller hose delivers a supply of water under pressure, which is applied to the dry constituents just before they emerge from the nozzle. The mortar issues from the hose in the form of a spray with considerable force, and impinges on the surface to be plastered. It is claimed that the high pressure with which the mortar is applied produces an adhesion and strength that cannot be equalled by hand applied methods.

There are several forms of blocks for building walls and partitions now being largely used in buildings in our parks and open spaces to house the new army of lady Civil Servants. One called "The Grip," which consists of 2½-in. or 3-in. terra-cotta slabs about 1 ft. 3 in. square, has diagonal grooves forming a lattice on the surface in

which steel reinforcing bars are laid, and the whole surface cemented over, is a strong form of this method; but none of these seemed to give any scope for discussion.

*Munition Buildings.*

Faint, though pursuing, I asked the Office of Works to allow me to see the drawings of what they were doing for the munition buildings, in the hope of finding something there. I found no new materials, but perhaps some of their methods may be of interest.

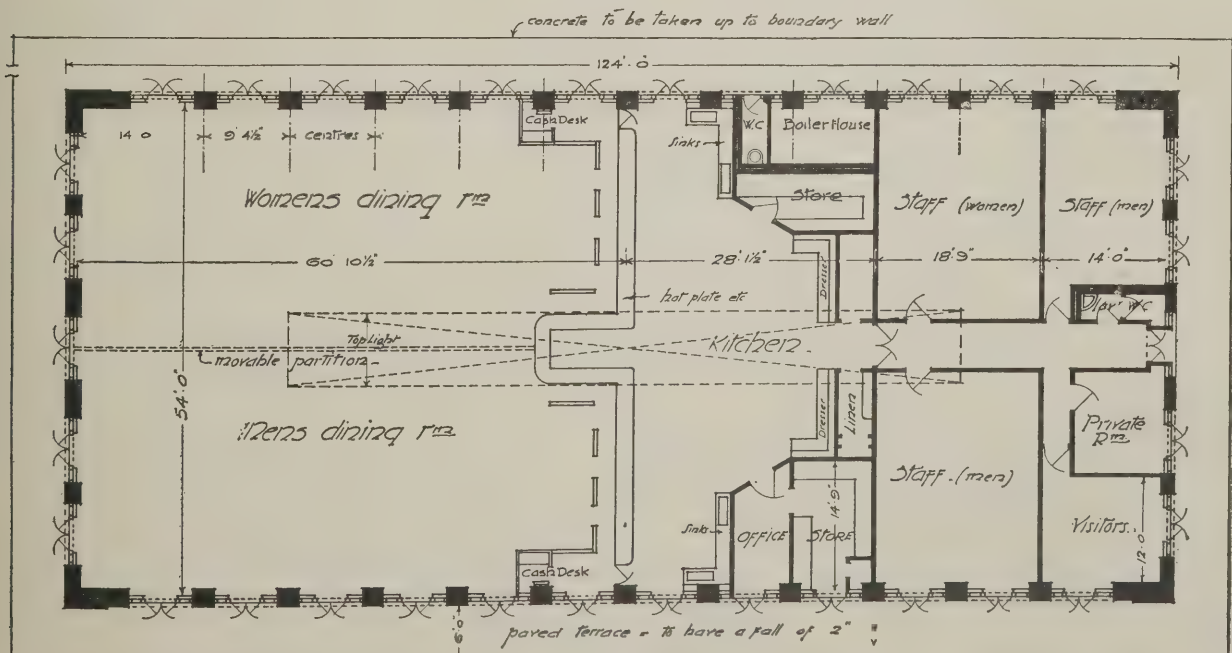
The problem the Office of Works had to solve was to provide the accommodation required with the greatest possible dispatch, and with the limitations imposed by the difficulty of getting materials.

The result is that these buildings are constructed largely of wood. The big stores, 1,000 ft. by 120 ft., are roofed by Belfast trusses of 60 ft. span, formed with 4-in. by 1½-in. battens fixed with cut nails clinched, which are found to be better than bolts. On these purlins are laid and then boarded, it being difficult to get curved galvanised corrugated iron. The boards are covered with roofing felt laid in the same direction as the boarding and lapped against the wind. These buildings are lighted by skylights in alternate bays; the trusses are spaced 12 ft. 6 in. apart. The skylights are glazed with one or other of the patent forms of glazing. The walls are timber framed, covered with ¾-in. rebated feather-edged boarding creosoted on the outside. The trusses are supported in the centre with wooden pillars built up with 9-in. by 3-in. deals; the feet of the pillars are bedded in cement concrete blocks.

*Floor Construction.*

The flooring is generally cement concrete, sometimes reinforced, as it is not unusual to have shells piled up so as to give a load of one ton to the square foot. In

\* A paper read before an Informal Conference of the R.I.B.A., held on Wednesday, March 21.



PLAN OF CANTEEN. A. ALBAN H. SCOTT, ARCHITECT.

covering large areas like this the question of levelling the site is a considerable difficulty, and it is found that a fall of 1 in 100 is not noticeable in the use of the building, and to save raising a floor 10 ft. at one end is a great consideration. The effect of these eighty Belfast trusses, which are mere latticework and centre pillars in one of these stores, which is about 22 ft. high, is quite impressive. One interesting point is that the level of the floors is taken at the level of the floor of the railway truck; these trucks are higher than the trucks used in the works, which run on 2-ft. tracks, so that these tracks are raised to bring the floor of the light trucks level with the floor of the railway trucks. Between the light trucks and the floor of the sheds there are trenches in which the workpeople stand, so that the shells standing on the floor of the shed are just bench high, and they can be manipulated with great ease. The result of this is that the shells never have to be lifted, but can easily be transferred from place to place. The rails of the 2-ft. tracks are made of wood, with the edge protected by a steel strip rebated in the wood to take the bearing of the truck wheels.

In other workshops the roofs are of the saw-tooth pattern, constructed of wood, and these have wooden lattice girders with 4-in. by 1½-in. cross braces, and 7-in. by 2-in. top and bottom members; these are duplicated when shafting or cranes have to be fixed, and the conveyors or runabouts are similar, only with a rolled joist for the carrier to travel on, and the girders are supported with wooden trestles. The mess-rooms, kitchens, and offices are built with wooden framed walls, with breeze or terra-cotta blocks, the "Grip" previously referred to being sometimes used and sometimes 4½-in. brickwork, which is afterwards tarred. The roofs are often slated.

#### Fire Protection.

The only protection from fire from sparks from the engines is to limewhite the woodwork. In some of the sheds where special processes are carried out the walls are lined with white American cloth; it is found that this can easily be kept clean. The internal gutters in the Belfast truss roof are wooden box gutters, finished with felt and asphalt.

One of these sheds had to be built on a foundation of mud pumped out of the river, 16 ft. deep. This was dealt with by means of a concrete raft, and a number of women were engaged in this concrete work. In this shed the returned empty cartridges and packing cases are repaired and refilled, and a large saving is thereby effected. The gas shells are tested by placing a cover over them with rats or mice in them, and these show if the shells are leaking; if they are found defective they are taken to a special building, which con-

tains gas cupboards, where the leaks are stopped without the gas affecting the workpeople.

#### A Reinforced Concrete Shell Factory.

A shell factory now being erected in reinforced concrete construction, covering two acres, was started on January 15, and one-fifth was finished on March 3. This building is one storey high, with a gallery; it has a saw-tooth roof, which, with the beams carrying the plumber block and gangways to oil the bearings and open the ventilators and attend to the artificial ventilation, are all of reinforced concrete; there is only thirty-nine tons of rolled steel in this building, in addition to the reinforcement, and all the steel is shell discard stressed up to ten tons to the inch. There is nothing new in the application of the reinforcement. The speed of the work is due to the foresight used in arranging for all the materials to be on the site within a week of the start. The centring was one-fourth of the area of the concrete. The cost was much less than a similar framed steel building, and it has the advantage of being fire-resisting. These buildings are quoted to show what is being done under present conditions, where restricted materials affect the question of design, and the last building brings me to what is not exactly a new material, but which will afford a subject for discussion, which none of the others, I am afraid, would.

Mr. Searles-Wood concluded his remarks with a long extract from a lecture on reinforced concrete by Professor Beresford Pite.

Mr. H. Kempton Dyson initiated a discussion, which was carried on by Mr. Percival Fraser, Mr. Matt Garbutt, Sir Henry Tanner, Mr. Francis Hooper, and Mr. E. Guy Dawber.

#### STANDARD UNIT CONSTRUCTION.

At the present time, when the difficulties and delays in designing and obtaining steelwork for buildings are ten-fold what they were in the course of ordinary practice before the War, particular interest attaches to the system of construction which has been worked by Messrs. F. Braby and Co., Ltd., of Glasgow. This system consists essentially in using a standard unit of triangular form in conjunction with steel bars. With these two elements it is possible to form a thoroughly reliable framework for light or heavy steel structures of either temporary or permanent character. The standard unit, shown by the diagram on this page, is constructed of steel angles bolted (or riveted) to steel plate corner gussets. The joint holes for the reception of a bolt of large

diameter are drilled in each gusset at the exact intersection of the central lines of sides of the triangle. The bars are of steel angle section, and are provided with joint plates, bolted (or riveted) to the angle, and shaped to accommodate the joint hole on the centre line of the bar for connecting up to the units in the structure. The flanges of units and bars are provided with standard holes for the connection of purlins, rails, or bracing bars. The various members are manufactured to standard templates, dies, and gauges.

The units and bars are assembled on a stiff frame of exact gauge, thus ensuring correctness of dimensions when the gusset plates are bolted up, and eliminating any slight inaccuracies of workmanship. The units and bars are also constructed in doubles for the purpose of providing greater strength. Particular members of the lighter frames may, if necessary, be reinforced by the addition of standard bars.

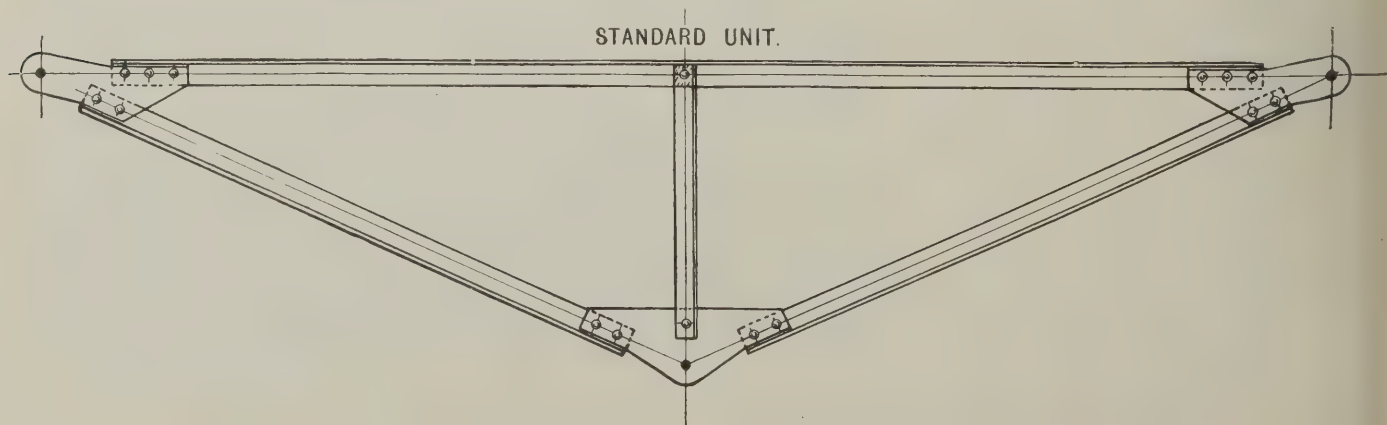
By a suitable combination of standard units and bars, spans may be obtained from 10 ft. to 50 ft. in closely graduated steps. Larger spans are possible, up to about 100 ft., by building the standard frames as girders running crossways to the structure, and carrying the roof covering on small cantilever trusses built up of single units and bars. The additional strength for the larger span girders is secured by providing flange plates fixed through the standard holes in the units. In designing the necessary combinations of units and bars to form specified structures, very great care is taken to ensure that no standard member bears more than the calculated safe strength.

Standard units are manufactured in two sizes—one having a base of 13 ft. centre to centre of pins, and the other (known as the "secondary" unit) a base of 10 ft., the two sizes in combination allowing for a wide variety of constructional formations.

In determining the dimensions of the units, and particularly of the gussets, Messrs. Braby and Co.'s aim was to reduce eccentricity of stresses and to provide for the assembly of the units in as great a variety of angles as may be required in construction.

The standard bars are made of lengths as required, the straight length of angle being cut and punched with standard holes for attachment to the gusset plates at each end.

Standardised construction of this type has many obvious advantages. For one thing, the work of the designer is simplified. The properties and capabilities of the units having been determined, all that is necessary is to decide on the most efficient combination of parts for the purpose in view. The system effects a not





considerable saving in erection cost and time, the interchangeability of parts ensuring ease and rapidity of assembly on the site. The units and bars are bolted or riveted up at the works, and are ready for immediate erection on delivery. Incidentally, their dimensions permit of convenient handling in transit. Another advantage is that the manufactured elements are procurable from stock, and erections may therefore be started as soon as the dimensions are decided upon. Designs are checked from stress calculations, and Messrs. Braby and Co. provide erection drawings giving full information and showing the manner of assembling the standard units.

The covering supplied for roofs and sides is corrugated steel sheets of Messrs. Braby's own manufacture. The purlins and rails carrying the sheets are of steel angle or light H section. For temporary buildings a further economy is effected by using timber purlins or rails, cut to size and holed at site. Other types of covering can be supplied to requirement. Windows, doors, and roof lighting are supplied to specification.

The accompanying illustration of a type of aeroplane hangar shows one of a variety of ways in which the standard units may be employed. The units are used in columns, cross girders, cantilever trusses, and bracing girders. Additional range strength in the centre bays of the main girders is provided for by flange plates fixed through the standard holes in the flanges of unit members. The "Standard-Unit" system of construction is fully patented, and unauthorised use of the method is therefore not permissible. Nevertheless, the detailed description is exceedingly interesting as a record of a valuable contribution to an important branch of national service, and Messrs. Braby are to be congratulated upon the ingenuity with which they have solved a somewhat difficult problem.

## RAPID REBUILDING.

### *Diary of Operations in Explosion Area.*

The following is a diary, recording the progress of the reconstruction work undertaken by the Office of Works in the area devastated by the recent munitions explosion near London. It is regarded by experts as a remarkable building achievement:—

January 19, 1917 (Evening of).—Explosion occurred.

January 22.—Report on damage to houses in immediate vicinity of explosion called for.

January 23.—Report presented by First Commissioner of Works to the Prime Minister.

January 24.—Prime Minister's instructions to proceed immediately with renovation of destroyed and damaged property received.

January 25.—Staff sent to site to prepare a schedule of dilapidations. Photographs of damage recorded on schedules; authority for expenditure received.

February 1.—All dangerous work shored up or felled.

February 5.—800 men employed. Debris cleared away from about 600 houses; work proceeding rapidly, in spite of severe weather conditions. Value of work executed £4,000.

February 7.—All roofs covered in temporarily where houses were in occupation.

February 12.—1,216 men employed. Progress somewhat delayed by severe frost. Cost of work to date, £12,000.

February 26.—1,940 men employed; good progress for the week; 792 houses re-roofed and re-slatted; total amount expended to date, £31,000. About 120 painters went on strike, demanding war bonus. They were all paid off, and other men obtained.

March 5.—796 houses re-roofed, slatted, glazed, and rendered weather proof;

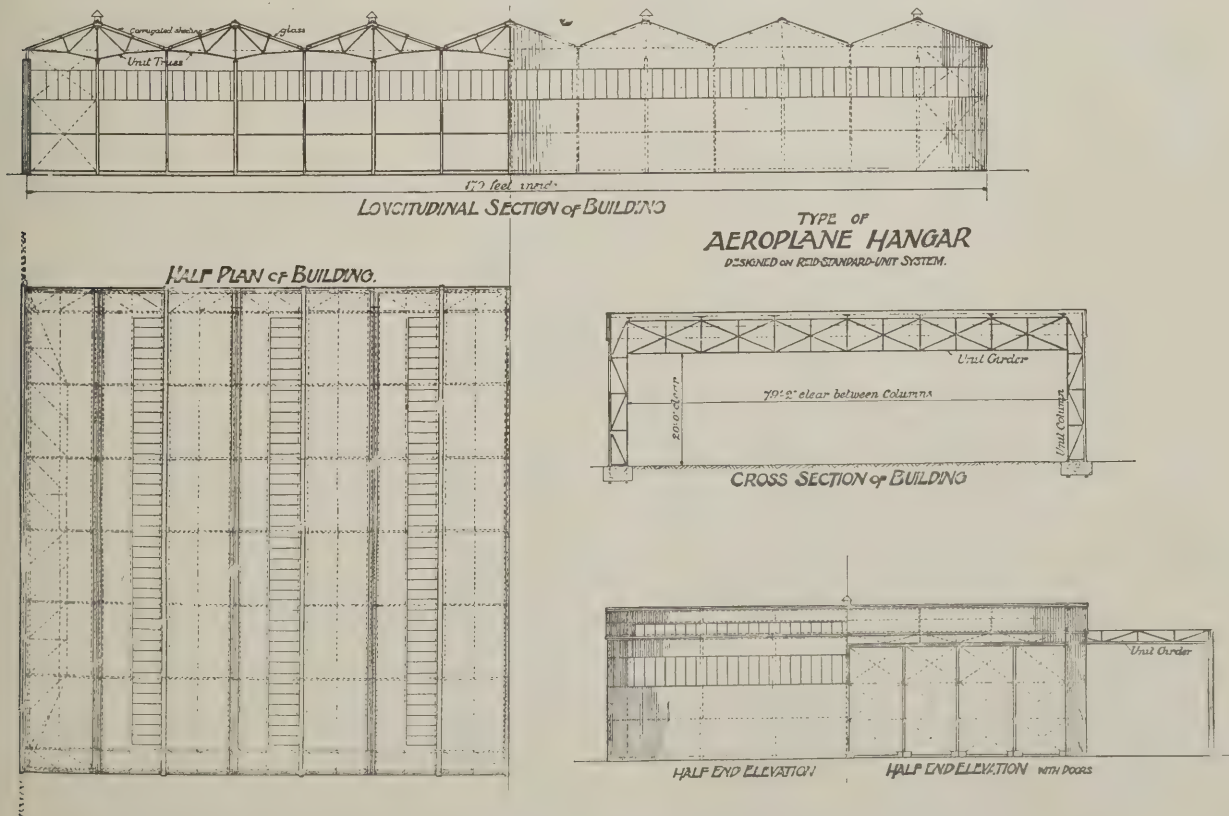
1,871 men employed. Value of work to date, £39,000.

March 12.—804 houses re-roofed, slatted, glazed, and rendered weather proof. Very bad weather handicapped the work, but progress has been satisfactory. Practically every house will have to be re-plastered. Number of men employed, 1,809; cost to date, £55,000; 106 houses completed and handed over.

## SLATE TRADE AND "NON-ESSENTIAL INDUSTRIES."

At a meeting of the Bangor and Beaumaris Board of Guardians, the Chairman, the Rev. Wm. Morgan, moved the following resolution:— "This board views with great apprehension the classifying of slate quarries as a non-essential industry, and begs leave to inform the Director of National Service that in view of the fact that a very large proportion of the workmen now employed in the quarries are old men, who could neither work the quarries themselves nor could be expected to find work elsewhere, the shutting down of the quarries as a result of further reducing the proportion of younger men employed would be a serious economic disaster to Carnarvonshire, and would create such widespread hardship and distress locally as might well become a source of national concern and even of weakness. The guardians therefore trust that the Director of National Service will take such steps as will avert such a calamity." The motion was adopted by a large majority, and copies ordered to be sent to the Prime Minister and the members for Carnarvonshire.

[With every desire to refrain from unnecessarily increasing the difficulties of Government, we nevertheless think it right that cases in which national industries are endangered should be reconsidered.]



DESIGN FOR AEROPLANE HANGAR ON STANDARD-UNIT SYSTEM OF CONSTRUCTION.



## UNIVERSITY COLLEGE, LONDON.

The annual report on the work of University College, London, has just been issued. The total number of students on the College books for the academic year 1915-16 was 1,133 (including 51 refugee students), whereas the normal number is about 2,200. Of the 1,133, there were 535 men (including 36 refugee students), of whom only 222 were in attendance throughout the session, the remainder taking up military or naval service or some special form of War work.

The normal activities of the College have been well maintained to meet the requirements of the students in attendance and a large amount of special War work has been carried on, of which a full record will be issued when the War is over. A large number of public lectures, dealing mainly with War problems, were given during the session. These were attended by upwards of 5,000 persons, many applications having been refused owing to the want of a larger hall for the purpose.

*School of Architecture.*

In April, 1916, Professor Simpson intimated to the College Committee that he desired to place his resignation of the Chair of Architecture in the hands of the committee, as he felt that it would be in the interests of the School of Architecture that, as soon as the War is over, a younger man should be appointed to the Chair, who would be able to develop the school "so as to obtain for it a fuller measure of outside recognition." The College Committee received with great regret this intimation from Professor Simpson. After considering a report from the Architectural Education Committee on the subject, they advised the Senate to invite Professor Simpson to continue to hold his Chair during the Session 1916-17 and, if the War does not come to an end sufficiently early in the present session to enable a new appointment to be made, then for the Session 1917-18 also; to allow Professor Simpson, while delivering his lectures as usual, to delegate to the Assistant Professor, Mr. Wilkinson, such of his other duties and work as he may see fit. The Senate have acted upon these recommendations, to which effect has been given during the present session. The future organisation of the staff of the School of Architecture will be further considered during the session.

The School of Architecture has suffered greatly in the number of its students through the War. During the Session 1915-16 31 students, including 5 refugee students, were enrolled; but of these 6 left for War service in the course of the session. An interesting feature of the work of the school during the session has been the increased number of women students (13), some of whom have taken part in the practical classes at the Carpenters' Company Schools in Great Titchfield Street. Three students obtained first-class certificates in architecture. In view of the decreased attendance of the evening classes during the Session 1915-16, it was deemed expedient to discontinue those classes for the duration of the War. On account of their suspension the College Committee advised the Senate not to apply to the Carpenters' Company for a grant in respect of the Session 1916-17.

The town planning classes have, however, been carried on during the year and, although the numbers in attendance have been small, the quality of the work produced has been good. Two students obtained the newly-instituted Certificate in Town Planning, and are now working for

the University Diploma in Town Planning and Civic Architecture. Professor Adshedd's public lectures on "War Memorials" attracted a large and influential audience.

The total number of day students in the School of Architecture during the present session is ten. The number of evening students in the Department of Town Planning is three.

## THE CATHEDRAL OF ST. MARY, EDINBURGH.

The western spires of this church having been completed, the "Scotsman" takes occasion to give a succinct history of the building. It is now more than forty years ago since the slowly rising pile of St. Mary's Cathedral began to arrest attention in the western part of the city. It owed its origin to the bequest to the Scottish Episcopal Church, as heir and residuary legatee, of two sisters, Misses Barbara and Mary Walker, of Coates, whose property was valued shortly after the death in 1871 of the latter at nearly a quarter of a million. The fabric as completed has cost altogether about £144,000, of which £13,200 represents the cost of the twin western spires. Their erection has been carried out under the direction of Mr. C. M. Oldrid Scott, architect, Westminster, who has followed closely—except in a few minor details—the original designs of his grandfather, Sir G. Gilbert Scott, R.A. The execution of the work was entrusted to Messrs. E. C. Morgan and Sons, builders, Glasgow. Mr. E. C. Morgan acted as clerk of works for Sir Gilbert Scott all the time (1873-9) that the erection of the main building occupied; he was also the builder of the chapter house. It had been a long-cherished ambition with him that he should have a hand in finishing the fabric in which he rightly took a deep interest. Though almost an octogenarian, he came forward four years ago with a spirited offer to build the spires at what was considered a low contract price, and when his offer was accepted he set about the work with rare enthusiasm in the summer of 1913. Needless to say, the outbreak of the War handicapped him heavily in many ways, and he did not live to see the second spire completed. He died in October last, at the age of eighty-three. The contractors were most fortunate in having a foreman joiner who has twice put up and taken down the lofty and intricate scaffolding required, with consummate skill, and without a single accident occurring from beginning to end. The height of these twin spires is 209 ft., the central spire—at the intersection of the nave, transepts, and chancel—being 67 ft. higher.

It may be of interest to compare the dimensions of St. Mary's with those of some of Scotland's more ancient fanes. Its external length is 262 ft., that of St. Giles's, Edinburgh, being 198 ft.; of St. Mungo's, Glasgow, 319 ft.; and of St. Magnus's, Kirkwall, 226 ft. In width, St. Mary's measures 67 ft.; St. Giles's is considerably wider, but St. Mungo's and St. Magnus's are narrower by 4 and 11 ft. respectively. The height of St. Mary's central spire, 276 ft., exceeds that of the spire of Glasgow's old cathedral by 21 ft.

St. Mary's is the only triple-spired cathedral in Scotland. England possesses two—at Lichfield (twelfth century), where the three spires are more effectively grouped, and at Truro (nineteenth century), where the spires are a few feet less respectively than their contemporary Scottish sisters.

## NEWS ITEMS.

*Operatives in the Building Trade.*

Operatives now employed in the building industry total 449,000, compared with 840,000 before the war.

*Builders' Conciliation Board.*

It is announced that Mr. Croad, of Gosport, has been elected chairman, Mr. A. G. White, employers, and Mr. J. T. Westcott, operatives, secretaries, of the South-Eastern centre of the Conciliation Board for the Building Trade.

*Bath Master Builders.*

The annual meeting of the South-Western Federation of Master Builders' Association was held at the Guildhall, Bath, for the transaction of annual business. Mr. Ireland (Bath) was the retiring president and Mr. W. F. Long is the secretary.

*For King and Country.*

We learn that Mr. F. J. L. Robertson, the secretary of Claridge's Patent Asphalte Co., Ltd., having joined the R.N.V.R., the whole of the company's pre-war staff has now joined the forces, and the directors are to be congratulated on their successful efforts to "carry on" under such difficulties.

*New Fellows of the Institute.*

At the fifth general meeting of the session 1916-17 of the Royal Institute of British Architects, held on March 5, two new Fellows were elected, namely, Mr. Percy Morris (Cates Prizeman, 1897; Associate, 1897), and Mr. Christopher William Frederick Wheeler (Associate, 1902).

*Dublin's Rebuilding Plans.*

Sir J. M. Gallagher presided at a meeting of the Corporation Reconstruction Committee at which a deputation was received of Henry Street property owners, who agreed to the proposed straightening of the line of frontage between Moore Street and Cole's Lane. The Committee are considering the question of the cost of widening Cole's Lane. The Committee decided to adhere to the widening of North Earl Street in accordance with the recent resolution of the Municipal Council. This will entail acquiring Messrs. Allen's site and moving back all the frontages in that part of the street.

*Building Trades Labour Committee holds its First Meeting.*

The Building Trades Central Advisory Committee (Operatives), recently appointed to advise and assist the Ministry of Labour upon matters affecting workmen in the building trades in connection with the working of the Employment Exchanges, has held its first meeting. Mr. C. F. Rey, Director of the Employment Department of the Ministry of Labour, opened the meeting, and expressed the hope that the formation of the Committee would lead to the closest co-operation between organised labour in the building trade and the Employment Department in the working of the Employment Exchanges. A discussion followed, in the course of which the Committee considered in a preliminary way the best methods of obtaining closer co-operation between Employment Exchanges and local trade union officials the means of increasing the supply of various classes of building trades labour for munitions work and other work of national importance.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

APRIL 4, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1161.

“UNMISTAKABLE evidences of an all-round awakening to the possibilities of scientific training” have induced the Governors of Huddersfield Technical College to prepare an extension scheme involving an expenditure of £85,000. We would fain hope that the attention given to the subject in these pages, and more especially in the many illustrations we have shown from time to time of up-to-date science buildings, may have been duly accredited as evidences of this “all-round awakening.” We notice that among the Huddersfield College proposals is a new department for dyeing—an industry that has obviously a great future in this country, for it is inconceivable that measures will not be taken to prevent effectually the insidious tactics of the Germans in relation to this industry, at which, it must never be forgotten, they made a dead-set, to its almost complete destruction. Never again! We now know all about “peaceful penetration,” and how to meet it. Confidence in the future of the dyeing industry in this country induced the editor of “Specification” to reproduce, in the issue for 1917, a full-set of drawings of a large new dye-house, which has been erected in Lancashire; and this reference to them is made in the assurance that they will be of considerable assistance where similar enterprises are in contemplation.

Apparently the rural housing question will, much sooner than could have been anticipated a year or two ago, solve itself in the manner in which we have repeatedly suggested that it should be solved—namely, by a levelling-up rather than by a levelling-down process. We have always consistently deprecated the desperate and frantic attempts to make the cottage fit the wage. For mean wages and mean cottages we have no relish, and we have been always strongly opposed to any scheme, no matter whence it came—from an ingenious architect, a paternal Government, or a well-meaning estate-owner—for housing the rural labourer on the miserable scale of his paltry pittance. It is in every way a better policy to give the man a decent wage out of which he can pay a fair rent for a decent cottage. Our hopes seem to be on the point of realisation: for our view of the question happens to be identical with that which has been adopted by the Agricultural Policy Sub-Committee and is an outstanding feature of their report issued last week, in which they recommend “a minimum wage for the agricultural labourer in each county” as well as the means of improving the agrarian outlook generally. Commenting on this report, a “Times” leader-writer says: “Among those who live by agriculture, the Committee give first place to the labourers, and we entirely concur in that line of thought. Agricultural labourers must be placed on a higher social and economic plane; that is the foundation of any real advance from the national point of view. Farmers need a new standard here. If agriculture is transformed in the eyes of the public, farmers must undergo some transformation of ideas on their part.”

With the hint conveyed in the report not obscurely that Tariff Reform is a condition precedent to this transformation we have nothing to do: we never

meddle with politics. Our concern here is the rural housing question; and we are delighted to assume that the war has killed the once prevalent notion that any hovel was good enough for housing the rural labourer; for, as Mr. Mervyn Macartney puts it, “It is quite certain that the returned soldier does not mean to be the dependent of the squire and live in a cottage tied to the estate.” To get him back to the land at all, it will be necessary to offer him inducements, chief among which will be a comfortable and healthy dwelling.

We print, without prejudice, the able and thoughtful article on the need for readjustment of industrial conditions which appears in another portion of the present issue. It does not exaggerate, we think, the critical character of the labour unrest which had become a dangerous menace before the war caused all other interests to sink into insignificance. Whether or not our contributor has correctly diagnosed the disease, or whether his suggestions for curing it are sound, does not so greatly concern us as the obvious necessity for the earnest and impartial study of a problem that urgently demands solution, and it is with the object of promoting—we might even say of provoking—judicial discussion of a subject that has been hitherto either evaded or else has been fought about with great bitterness by those who argue for victory rather than for the establishment of truth, that we print the article in question. It is put forward not as advocacy for one side or the other, but simply and avowedly as a basis for practical discussion, and it states very fairly and temperately a point of view that certainly deserves careful examination, and is the more likely to get it because of the ingratiating tone and bland temper of the writing. No impartial student of labour problems can have failed to notice the havoc wrought by bad temper unnecessarily imported into negotiations that ought to be conducted with urbanity. There has been too much of the hectoring demand met by the haughty refusal, with mutual recrimination and sulky ill-humour on both sides supervening.

These untoward elements have been, it is true, largely eliminated by the system of conciliation boards, which, however, have not invariably preserved the serene atmosphere appropriate to their name and purpose. Merely to get rid of this domineering spirit would be an enormous advantage; but the fact is that there is a joy of conflict which is as deeply rooted in human nature as is the regard for self-interest which prompts the demand and the refusal. But while it is hopeless to expect that the war will eradicate these characteristics of human nature, it may nevertheless be possible to effect a readjustment that will restrict their more mischievous manifestations. Our contributor's proposals, however, would seem to involve such a social as well as such an industrial revolution as seldom comes suddenly, even as the sequel to a tremendous upheaval. Nevertheless, war conditions have shifted many points of view, and are preparing the way for many drastic industrial changes, of which, however, the mere tendency is obscure, while the details are not yet in sight. Some sort of reconstruction seems inevitable, and though it is as yet too early to begin it, or to formulate definite aims which must for



the moment be necessarily based on utterly inadequate data, it is no doubt wise to do everything possible towards getting the site cleared and surveyed for future operations; for obviously there is a demolition order impending, if, indeed, it has not been already authoritatively delivered.

Attention may be usefully drawn to the official announcement, which appeared in our advertisement pages last week, to the effect that the Director of Timber Supplies has decided to institute a monthly census of stocks of timber. Under the Defence of the Realm Act, it is intimated to all timber merchants and large consumers of timber that they must submit a monthly return of all stocks of softwoods, including pitchpine, sleeper-blocks, poles, and pit-props, held by them on the last day of each month, the return being due on the fifth of the month following. Forms on which this return is to be made are being posted to merchants and large consumers, but any holder of stocks who has not received the form in this way must apply for it to the Director of Timber Supplies, War Office, Caxton House, Tothill Street, Westminster, S.W.1. Pit-props and pitwood held by colliery owners do not come under this obligation, and stocks of less than five standards need not be reported. Timber dealers whose book-keeping is up to the mark will find no great difficulty in complying with this order, which is doubtless dictated by national necessity. We fear, however, that in too many instances the owners of small timber yards do not observe the rigour of strict book-keeping, but depend mainly upon memory and observation. For these the exact ascertainment of actual stocks will, in the initial effort, involve much labour and expense. We are not without some faint hope that it may be rewarded by a discovery, as the result of the census, that, after all, the nation's stock is much larger than had been estimated and that consequently it may be found possible to relax the restriction on private use. This is admittedly an optimistic view, but we should be by no means astonished if it turned out to be the true one. It is based, however, on nothing else than one's own observation of the many huge stacks of timber that may be seen in a short railway journey in almost any direction.

It is with much pleasure we notice that the Institute of Builders has been so fortunate as to secure the services of Mr. A. G. White as secretary. Mr. White, of course, is not relinquishing the post he has held with distinction for the past eleven years of general secretary to the National Federation of Building Trades Employers, and it must be of great advantage to both bodies to have the same secretary, especially one possessing the extensive experience and highly specialised ability of Mr. White, to whose rare blend of sagacity, energy, and courtesy the federated master-builders of the kingdom are indebted for the smooth and effective working of the delicate and complex machinery of organisation which they have set up. The Builders' Institute has been called the House of Lords of the building industry; and its semi-detachment from the more commonplace business of the federations and societies, and the influence it exerts in the region of the higher politics, render the description rather happy. With the everyday incidents of organisation it is not concerned, but it finds considerable scope for activity in considering building interests in their broader aspects. For example, it is now handling the difficult problem of apprenticeship, and has ready a revision of the forms of building contract. For such statesmanlike work Mr. White, with his unrivalled knowledge of the building industry, home and foreign, his philosophical temperament and firm grasp of principles, as well as his mastery of detail,

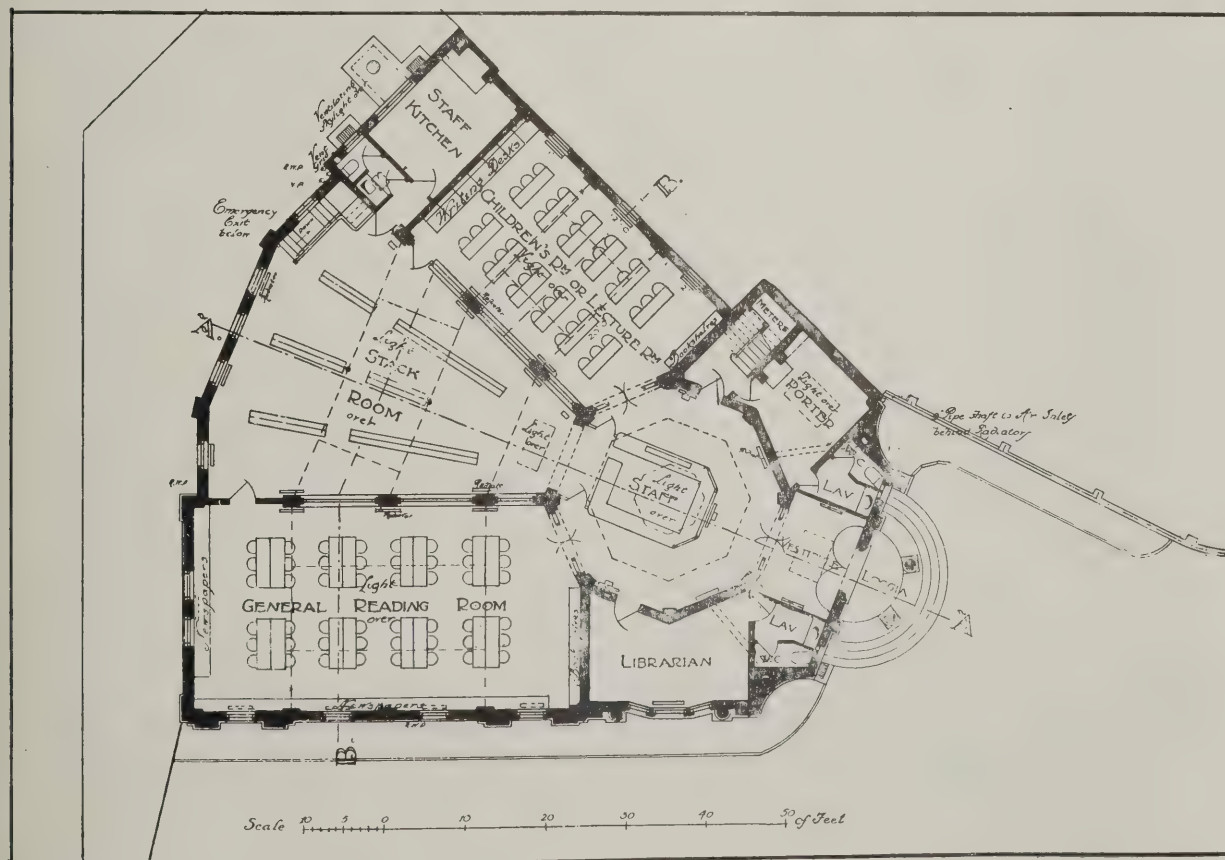
is uncommonly well endowed and equipped, and the Institute is to be congratulated on securing the services of so accomplished a secretary.

It seems worth while to call attention here to an interesting example of early decorative painting discovered by Mr. F. G. Newton as a student of the British School at Rome. While making drawings in a house which, judging from the character of its brickwork, is of the period of Septimius Severus, Mr. Newton found, at the back of the house, in a corridor belonging presumably to another and earlier building, some remains of a ceiling-painting of Julio-Claudian style. The pictures, says Miss Eugenie Strong, in a letter to the editor of the "Times Literary Supplement," "help to fill one of the many lacunæ in the history of Roman painting, which for the earlier periods has been mainly based on the examples from the Græco-Roman cities of Campania, while examples of later date seemed totally missing." These and other paintings copied by Mr. Newton in the house at the southern slope of the Palatine Hill, are reproduced in colours in Vol. viii. (recently issued) of the Papers of the British School at Rome. From these papers it is evident that the British School is very brilliantly justifying its existence, which, while yet in its infancy, has been prolific in interesting finds.

One remembers with a shudder that an early Committee of Public Safety was nothing of the sort, but quite otherwise. In California they have a Department of Safety which is what it pretends to be. It was created by the Industrial Accident Commission of California, and its safety engineer has published an interesting description of the use of safety nets on structural work. Following the example of Chicago, California has adopted these where the character of the building prevents compliance with the State law which requires the use of temporary plank flooring at each storey of a structure to protect workmen below from falling objects. Obviously the nets, which are made of manilla rope, with a mesh four inches square, offer the further advantage over planks that when it is a workman that falls no question arises as to which is the harder. Two men who fell from a height of a hundred feet in Chicago would undoubtedly have been killed if they had landed on anything less resilient than the nets; for as the ancient jest moralises the situation, "It is not the fall that hurts, but the sudden stop."

That nets arrest a fall much less abruptly than stone or concrete was probably within the experience of the early Egyptians; and, going not quite so far back towards antiquity, one remembers the nets that were stretched across the auditorium to catch "the daring young man on the flying trapeze." It is in the construction of theatres, music-halls, and similar buildings, where plank floors would be impracticable, that the safety nets will be most serviceable. It may be worth while to consider whether nets might be advantageously adopted in our own country in addition to the woodwork which is put up to protect the public, but fails to fulfil this purpose when objects such as brickbats hit it hard and bounce over it. Nets could hardly be used in substitution for such hoardings, as they would let through the dust, lime, sand, cement, mortar, and other materials that refuse to be enmeshed; nor could they restrain the "firmer" chisel that elected to go through them edge first. There are, however, as the Admiralty seem to have discovered, great possibilities about nets; and the merits of wire meshes are clearly recognised by the building trade. Perhaps this notice of the comparatively new American practice may suggest further application of the idea.





CURRENT ARCHITECTURE (SERIES IV.). XV.—CARNEGIE LIBRARY, CHORLTON-CUM-HARDY, MANCHESTER.  
HENRY PRICE, CITY ARCHITECT.







CURRENT ARCHITECTURE (SERIES IV.). XVI.—CARNEGIE LIBRARY, CHORLTON-CUM-HARDY,  
MANCHESTER: STAFF ENCLOSURE FROM VESTIBULE.  
HENRY PRICE, CITY ARCHITECT.





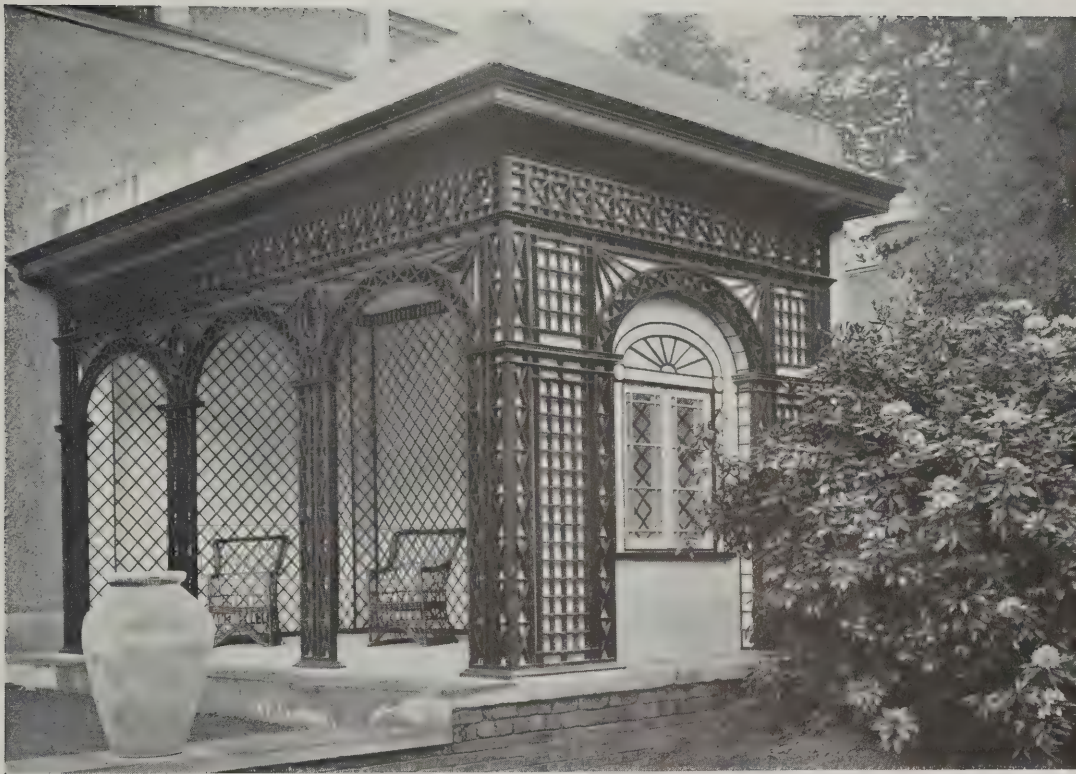


MODERN DOMESTIC ARCHITECTURE (SERIES III.). I.—"DALNYREED," BARLEY, NEAR ROYSTON, HERTS: GARDEN FRONT.

EDGAR WOOD, F.R.I.B.A., ARCHITECT.





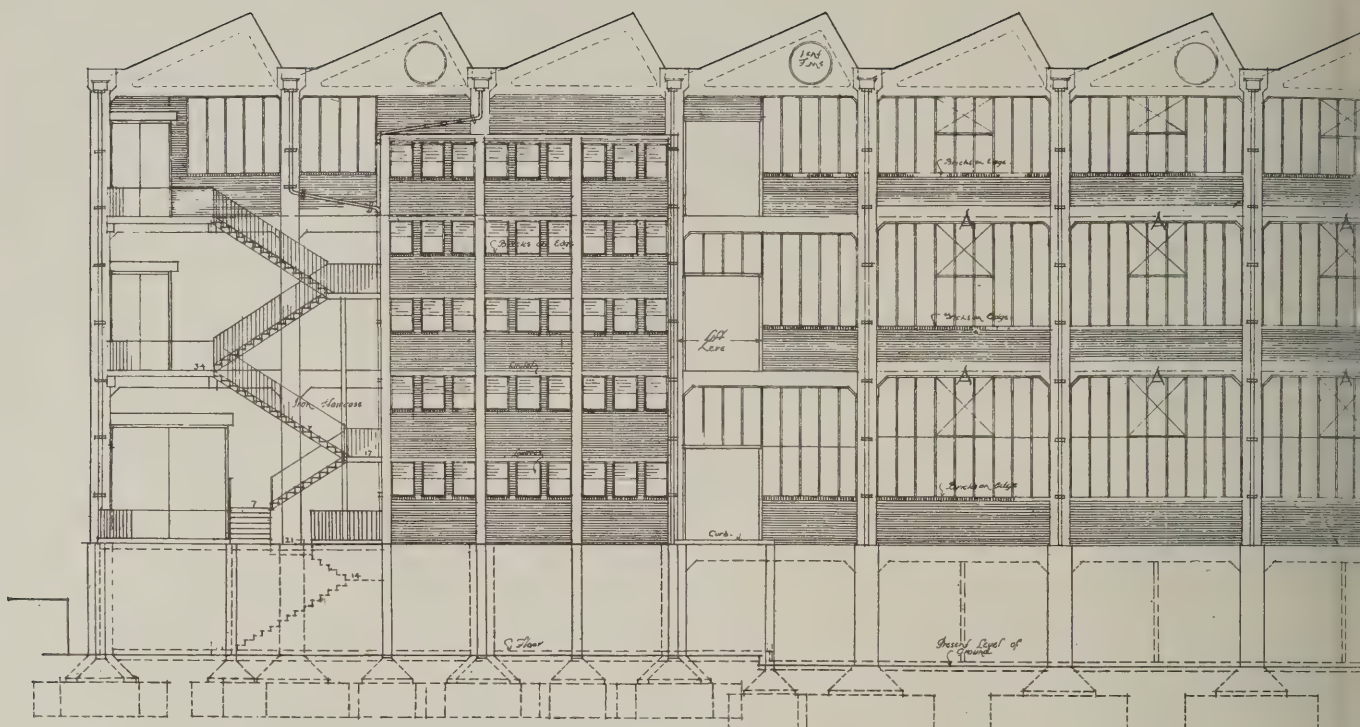


MODERN DOMESTIC ARCHITECTURE (SERIES III.) II.—TRELLIS GARDEN PAVILION, 5, ULLET ROAD, LIVERPOOL.  
PROFESSOR C. H. REILLY, F.R.I.B.A., ARCHITECT.

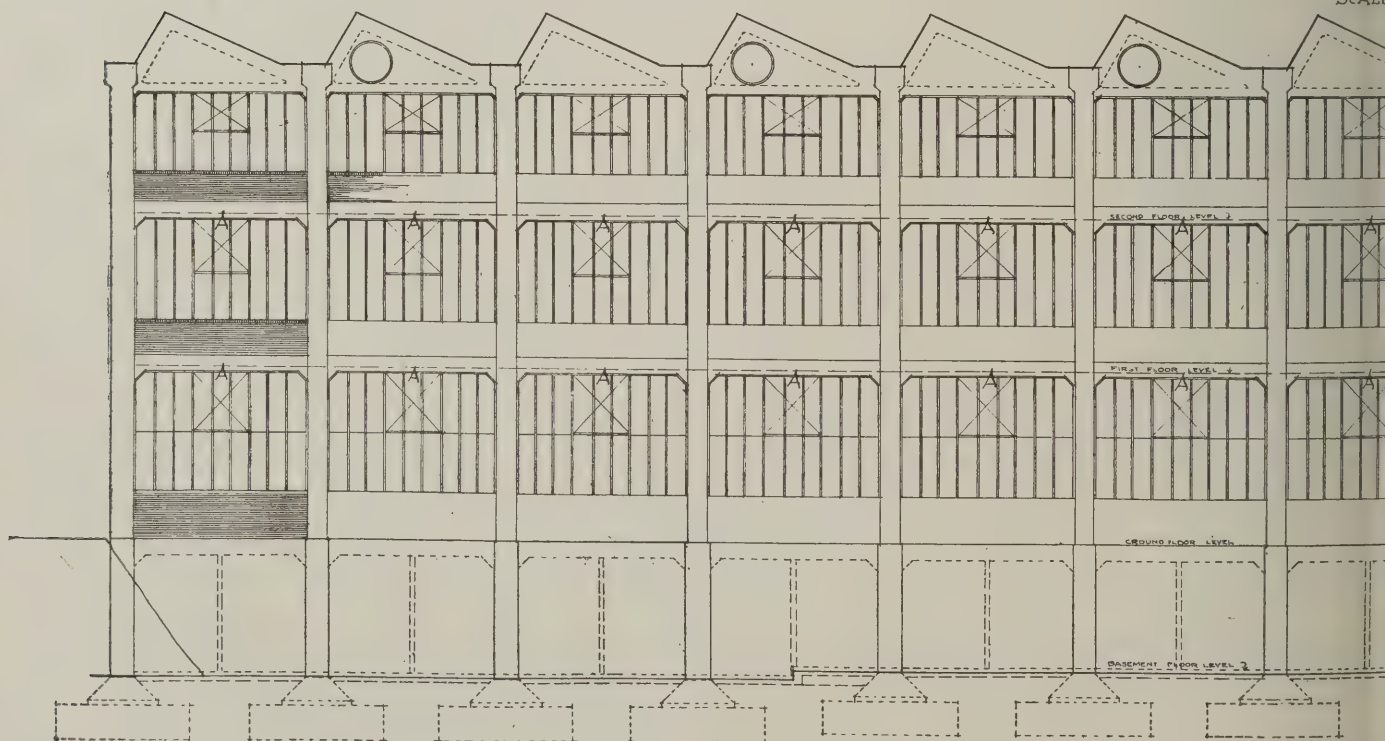
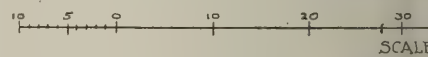




LIBRARY  
OF THE  
UNIVERSITY OF ILLINOIS



ELEVATION

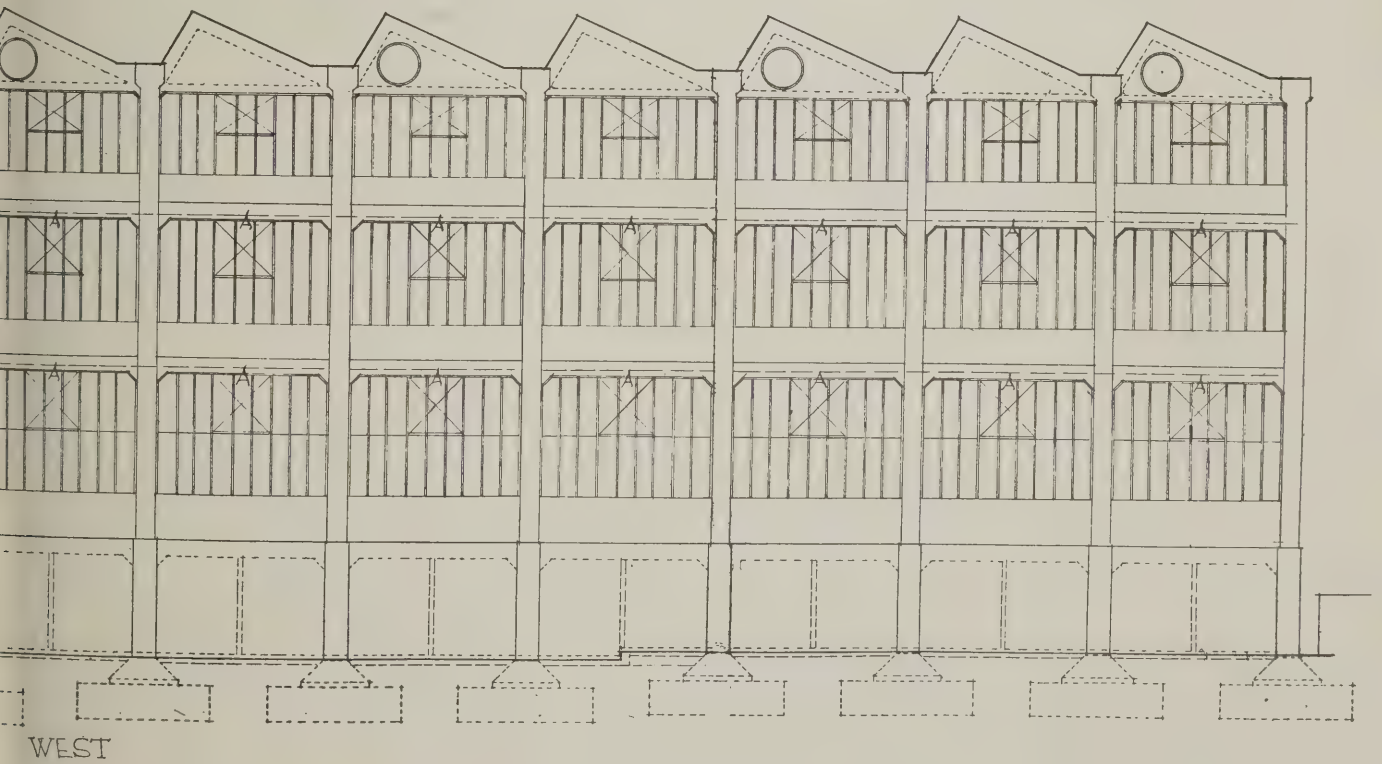
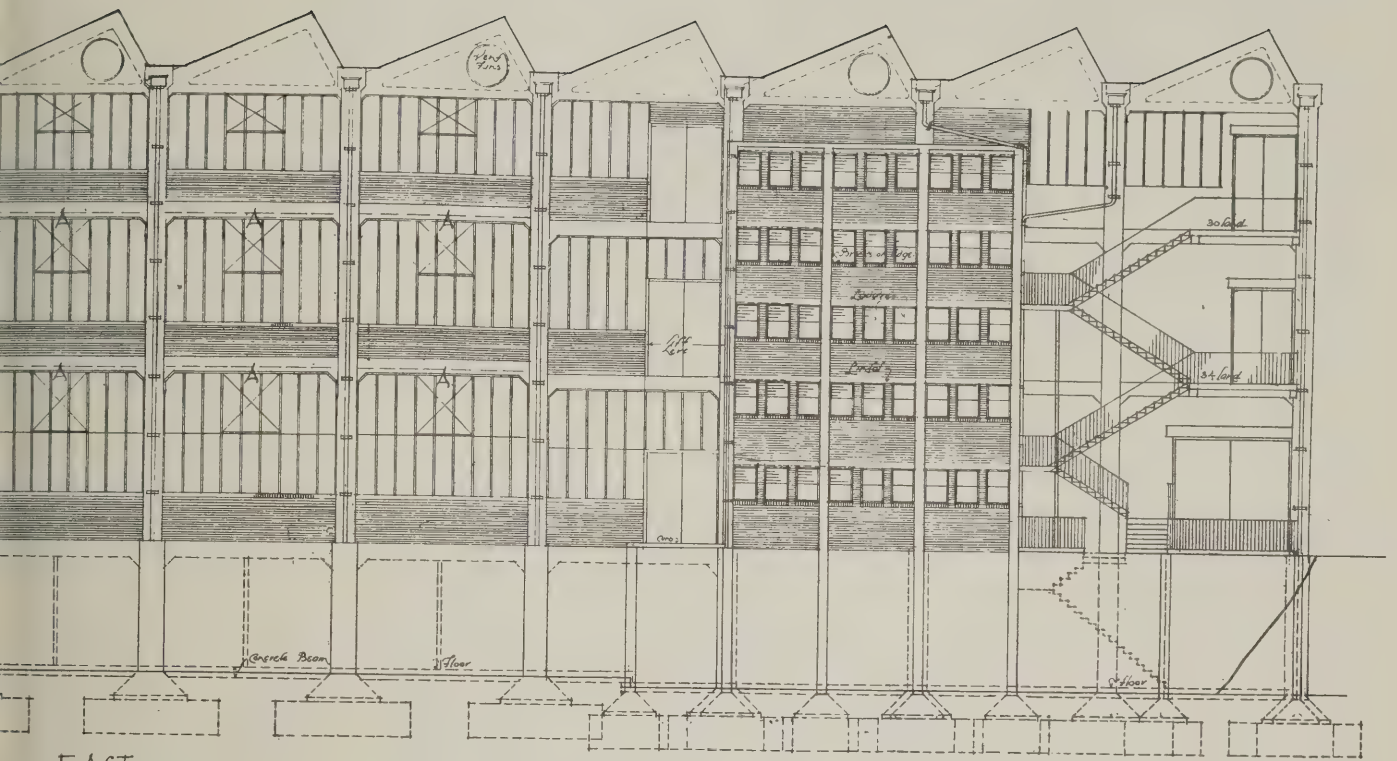


ELEVATION

MODERN INDUSTRIAL BUILDING

A. ALBAN





II.—A MUNITIONS FACTORY.  
ARCHITECT.





## THE PLATES.

*Carnegie Library, Chorlton-cum-Hardy, Manchester.*

THIS library is one of two which have recently been completed in the neighbourhood of Manchester from the designs of Mr. Henry Price, the City Architect. The triangular shape of the site necessitated planning of a special character. The governing feature is an octagonal hall, carried up in two stages and crowned with a dome. From the octagon (which contains the staff), access is gained on three sides to the main compartments, which consist of a children's room (or lecture-room), a stock-room, and a general reading-room. Accommodation is provided on either side of the octagon for librarian and porter respectively, while a staff kitchen is arranged at the end of the children's room. The lay-out is very compact, and the lighting arrangements are excellent. The interior contains some refined detail, a particular instance being the floorway and surround shown on the view looking through into the hall, reproduced on one of the plates in this issue. The general arrangements of the library may be studied from the plate showing the plan, and the accompanying sections, together with the elevation illustrated on the plate, show the composition of the

exterior, which is sufficiently dignified without being unduly austere.

*"Dalnyreed," Barley, Herts.*

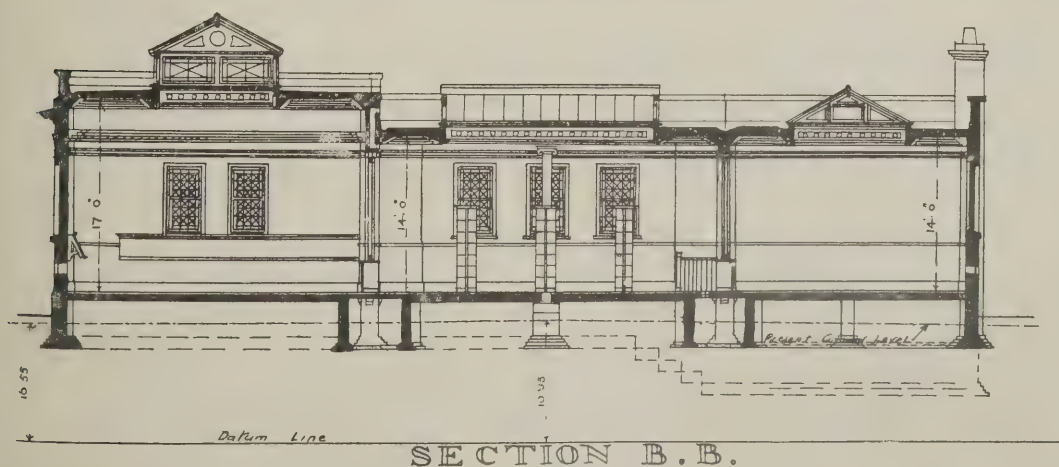
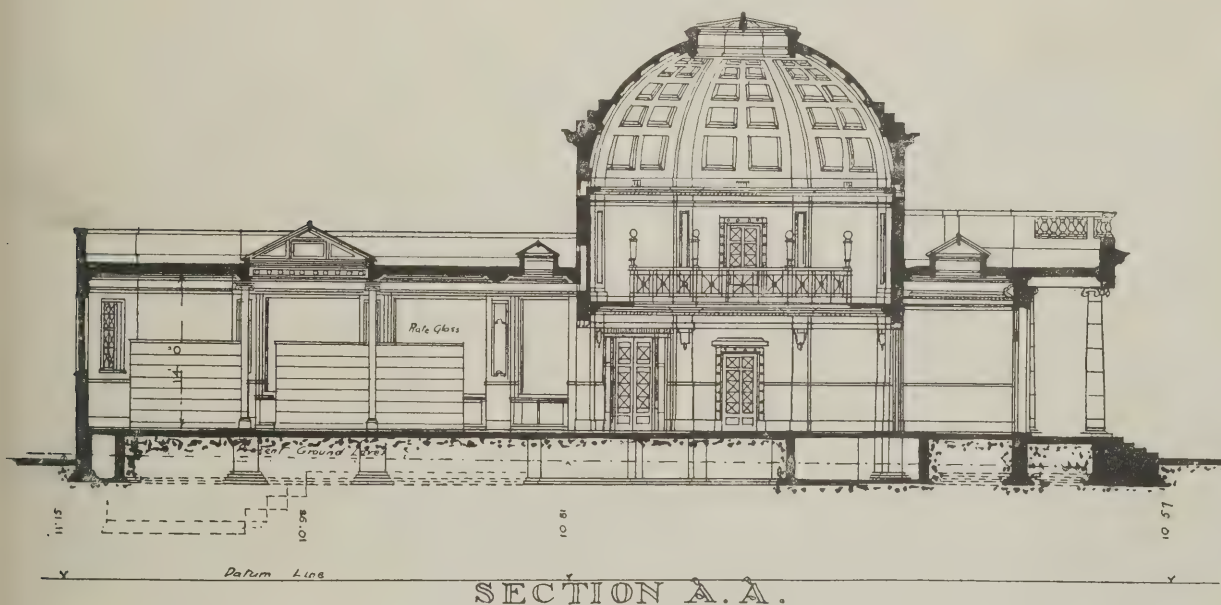
This house, an excellent example of Mr. Edgar Wood's individual manner of design, is built of local thin sand-faced bricks and Bath stone, and has a flat reinforced concrete roof covered with asphalt. The roof water forms the only source of water supply (except drinking water, which is carried from a well in the village), and is stored in tanks formed below ground, which is all chalk. The house, standing high, has extensive views to the south, and was built without contract by Mr. Albert Chuck, of Badley. The front entrance is fitted with interior marble jamb linings.

*Trellis Garden Pavilions, Liverpool.*

These pavilions are carried out in wood trellis (made in the joinery shops of the builders, Messrs. Whitby and Sons, Liverpool) and brickwork rendered in cement. That at No. 5, Ullet Road, has modelled plaster figures in relief by Miss Ethel Martin, sculptor, of Liverpool. The architect was Professor C. H. Reilly, Liverpool.

*A Munitions Factory.*

Some particulars of this factory are given in a short article on page 172.



Scale 10 5 0 10 20 30 40 50 of Feet

# A PLEA FOR A BROAD, VIGOROUS HOUSING POLICY.

Mr. W. S. Purchon, M.A., A.R.I.B.A., Lecturer in Architecture at the University of Sheffield, contributes to the "Sheffield Telegraph" an article advocating a broad, vigorous housing policy.

Owing largely to the War, he says, we are beginning to look upon such problems from a different point of view. The old slackness is making way for a finer, grander, sterner, and broader outlook. We used to see clearly enough that Sheffield and other big manufacturing cities were great sources of strength to the country, but we did not realise that they were also sources of weakness.

We did not realise, as, indeed, we are only beginning to realise, that the people of the country are its greatest asset, we lacked the imagination which would have shown us that we were wasting that asset in prodigal fashion. We said, glibly, that the people made the slums, when we ought to have been marvelling at the wonderful fight which was, and is, being put up by large numbers of brave women in our mean streets and courts—a grim fight against dirt and other difficulties, in which I fear many of us who are more fortunately placed would rapidly surrender.

We did not realise that, apart from slums, long, dreary streets of inconvenient, inefficient houses, dull, grey, and lacking in inspiration, form a sad environment which stunts the development both mentally and physically. Let us remember that the world's leaders, its great engineers, inventors, statesmen, philosophers, poets, artists, and teachers are born in all classes of society, and that we cannot afford to lose them, that we must have the best they can give us.

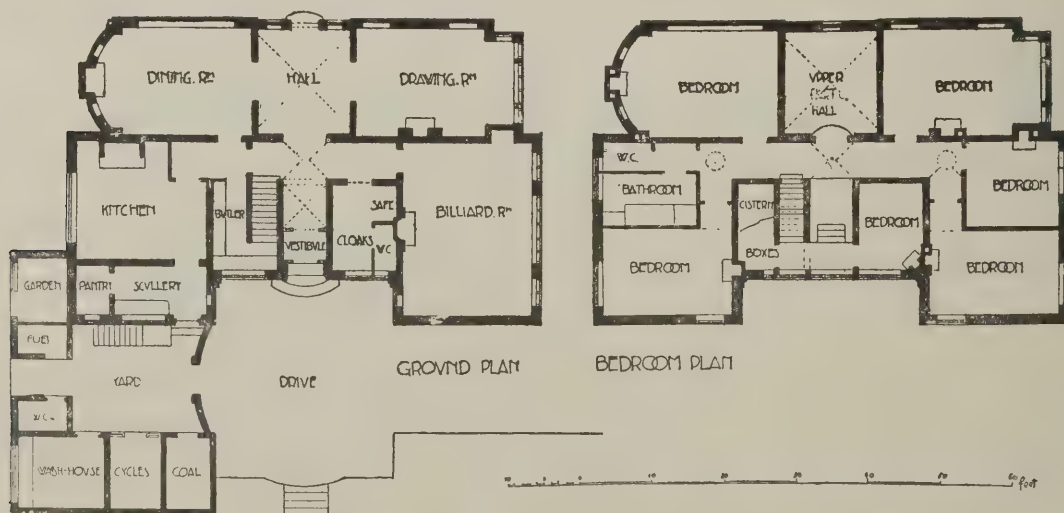
The main object in putting forward housing schemes for Sheffield or elsewhere is the promotion of the national welfare. It is against the public interest that large numbers of people should be obliged to live in squalid, insanitary, and unsightly homes, packed closely together in mean streets and courts, and the fact most needing emphasis is that the community simply cannot afford to continue on the old lines. The new schemes may be expensive, but they are vastly cheaper in the long run than the present makeshifts. The lack of good housing accommodation is a serious menace to the moral, intellectual, and social welfare of the city.

The special needs of Sheffield appear to Mr. Purchon to be (1) the removal of large numbers of back-to-back houses, which are unsuitable for their purpose, not only because of lack of through ventilation and

other defects inherent in that type of building, but also because of the difficulty of providing suitable means of reaching the sanitary conveniences, and because of the absence of baths in such dwellings. (2) The clearance of streets and houses which are barring the way towards the full and proper development of the city. (3) The provision of good dwellings in a suitable environment, not only for the poorly paid labourer, but also for the comparatively well-paid skilled worker, the foreman, and for a large number of people of various classes who are earning from £100 to say £150 per annum. (4) There is also a great need in Sheffield for hostels for single men and women on the lines of Ingram House, Stockwell. This need is almost self-evident, but as it is a special problem further reference will not be made to it in this article.

In considering the accommodation to be provided in the new houses of various classes, if the motive behind the scheme is that of national welfare rather than immediate monetary profit either to the individual, the municipality, or the country, not only the earning power of the tenant, but also the size of his family, must be borne in mind.

Under the present scheme every inducement is offered to the man of comparatively small means to have either no children or



"DALNYREED," BARLEY, ROYSTON, HERTS. EDGAR WOOD, F.R.I.B.A., ARCHITECT.



an extremely small family, while the man and woman with three or more children soon discover that instead of being considered worthy citizens they are merely looked down upon as undesirable tenants.

Coming to actual accommodation, Mr. Purchon suggests that the following five types are needed: (a) Living room, scullery, bedroom; (b) living room, scullery, two bedrooms; (c) living room, scullery, three bedrooms; (d) parlour, living room, scullery, three bedrooms; (e) parlour, living room, scullery, four bedrooms. In each house a bath, larder, coals, and reasonable cupboard accommodation should be provided, together with a sanitary convenience reached from under over. A box-room should be provided, if possible, particularly in the larger houses.

Classes *b*, *c*, and *d* are usually provided in modern housing schemes, and need, I think, no special comment; Classes *a* and *e* are rarer, but very necessary. Class *a* is a special type considered particularly suitable for newly-married couples, for elderly couples without children, and for special cases of sisters, etc. These houses would in all probability have to be built as flats, and while most of them should be made self-contained, each with its own bath, etc., it seems worth considering the advisability of building some in which a central entrance with stair, bath, etc., would serve four such dwellings.

There seems to be in Sheffield a particular demand for a larger type of house, such as type (e). In any case, it should be considered necessary for a family with over four children if the family is to live in reasonable comfort and decency.

The dwellings, of whatever type they may be, should be constructed soundly, honestly, and simply, of good permanent materials. If cost of upkeep were kept more prominently in view we should get a sounder type of house building, with less of the fussy exposed woodwork which is so common. Sanitary fittings, plumbing, drains, etc., should be as good as possible if true economy is aimed at, and special attention should be paid to prevention of damage and stoppage caused by frost.

While the attempt to get a cottage for £100 was interesting, I fear that on the whole it did more harm than good. It is the wrong way in which to tackle this serious problem of housing.

## DUBLIN RE-BUILDING.

Mr. Byrne, in the House of Commons on March 22, asked the Chief Secretary if he was aware of the condition of those engaged in the building trade in Dublin; that these circumstances had been brought about by the action of the Government in refusing to grant facilities for the obtaining of the necessary materials for the rebuilding of the destroyed area of the city; and if he would cause instructions to be issued for the supply of materials to enable owners of destroyed property to rebuild their premises?

Mr. Duke said he was aware of the desirability of stimulating employment in Dublin. The Government had not refused facilities for obtaining the materials for rebuilding the destroyed area of the city. The Minister of Munitions promised some time since to give all practicable facilities, and he (Mr. Duke) was glad to see it stated in a leading journal in Dublin that the goodwill of the Minister of Munitions has been demonstrated not only by his good offices in allotting to Dublin a quantity of steel for building purposes, but by his securing it at a remarkably favour-

able price. He (Mr. Duke) regretted that the hon. member thought fit, by this and other questions, to impute to the Government malevolent intentions with regard to the Irish metropolis which did not, in fact, exist.

[We feel constrained to add that we share in some measure Mr. Duke's regret at the persistent attempts to incriminate the Government in this matter, which ought, surely, to have been kept free from all suspicion of political animus. Taking everything into consideration, the Government has behaved very magnanimously, and we should be glad to see correspondingly generous recognition of the fact.]

## LEGAL.

### Carpenter's Compensation Claim.

#### *Bandee v. Hipperson.*

March 20. Amptill County Court. Before His Honour Judge Wheeler, K.C.

This case was in respect of the amount of compensation to be paid to Bandee owing to an accident while working for Mr. F. R. Hipperson, builder and contractor, Norwich, at Haynes Park Camp. Mr. C. E. Dyer, for the respondents, said a signed agreement had been come to between Bandee and respondents as to the amount to be paid in commutation of weekly compensation payments, but the Registrar had refused to file it. He contended that the agreement by which Bandee undertook to accept £35 should be filed. His Honour: I do not think it ought. Counsel went on to say that on March 20, 1916, Bandee slipped from a chair on which he was standing and fractured his left leg. The only ground alleged against the agreement was the inadequacy of the amount. Dr. S. J. Ross, Bedford, said when Bandee was in the County Hospital he was under witness's charge. As a result of the accident their would probably be some stiffness, but not permanent injury. On March 12 this year he examined Bandee, and told him to give up the crutch and use a stick. The muscles of the thigh were wasted and flabby, and that was due to disuse; Bandee complained of feeling tired, and that was also due to want of use of the muscles. Witness gave him one month to get used to walking with a stick, and three months in which to do some light work, and then he should be fit for his ordinary duties. If the limb was not used the muscles would atrophy, and there was no reason why he should not have attempted to use the limb months ago. Bandee said he was nearly sixty-one. At the time of the accident he was earning £2 weekly and since then had been receiving £1 as compensation. He had offered to take the £35, but did not think he would ever be able to go to the bench again. His Honour (mystified): What do you mean by the bench? Mr. Dyer: He does not mean the judicial bench, your honour. His Honour: Oh! he had better keep away from that as long as possible. In the course of some argument the judge said the medical evidence was very weighty, but at the same time he was bound to take notice of what the man said. Mr. Dyer asked his honour to indicate a reasonable sum he would be disposed to award with a view to the parties coming to an agreement. Bandee's own doctor put the time at which he could work at twelve months. His Honour mentioned £60 as a reasonable sum. Mr. Dyer consulted his client, and said the amount would be agreeable, and the case was settled accordingly.

## Huddersfield Technical College: Large Extension Scheme.

A large extension scheme, involving the expenditure of about £85,000, is being undertaken by the governors of the Huddersfield Technical College. In taking this step they have been encouraged by the "unmistakable evidences of an all-round awakening to the possibilities of scientific training," and they are appealing to the local public for support. For many years the Huddersfield Technical College has been seriously overcrowded, and in some branches—carding and spinning—no provision whatever has been made. To remedy such defects and to promote the development of the coal-tar colour industry the governors have decided to adopt the following programme:

(a) To build and equip the department of coal-tar colour chemistry.

(b) To extend and complete the textile department by establishing new sections for (1) carding and spinning, (2) cloth finishing, by providing improved facilities for (3) weaving, (4) testing, along with a textile museum; further, to build and equip a new department of dyeing.

(c) To extend and develop the departments of mechanical and electrical engineering, especially in facilities for practical and experimental work.

(d) By giving effect to these proposals, to set free a large amount of space for necessary extensions and improvements in other departments, such as chemistry, building trades, biology, commerce, languages, and domestic economy.

In their appeal to the public the governors state that Huddersfield is the leading centre in this country for colour chemistry and the manufacture of dyestuffs, and that the capital invested in the industry in the district is already very large and is rapidly increasing. They proposed to proceed at once with the erection of buildings for coal-tar colour chemistry, and at the same time to make preparations for proceeding with the rest of the scheme as soon as the War is over. As they believe the establishment of a special institution for the investigation of problems connected with the manufacture of dyestuffs is a national necessity, the governors have secured an excellent site for the erection of permanent buildings, and complete plans have been prepared for really spacious laboratories furnished with the most modern equipment and including provision for large-scale work.

The new textile department will be modelled on the newest and best English and Continental lines. A plain but serviceable building will be erected on a site already secured, and a complete and up-to-date plant in carding and spinning, weaving (hand and power), dyeing, and finishing, will be installed. The Huddersfield engineers have generously undertaken to provide the complete equipment of the proposed new engineering section, and they have appointed a committee to visit the leading technical colleges in this country in order to get ideas and to secure that the new department is developed on the best and most up-to-date lines. This splendid offer of the engineers has been of very great assistance to the governors, who are therefore free to concentrate on the proposed new textile department and the erection of buildings for coal-tar colour chemistry and dyestuffs.

[The "all-round awakening to the possibilities of technical training" is commented upon in the first editorial note on page 161.]



## WORKING CLASS HOUSING.

The following letter from Mr. Mervyn Macartney, B.A., F.S.A., F.R.I.B.A., architect to the Dean and Chapter of St. Paul's, has appeared in the "Times":

Amid the urgent calls on the Government to press on with military matters and food control, we may expect that *post-bellum* problems will receive comparatively little attention. Amongst these is the provision for proper housing in town and country for the demobilised armies, both of men and women. Many of the cherished faiths of other days have vanished. It is quite certain that the returned soldier does not mean to be the dependent of the squire and live in a cottage tied to the estate. There must be provided separate dwellings for the working people, comfortable and healthy, with sufficient land to supply food for the family. I am convinced that no nation can really compete with the British in organising capacity. What we lack is prevision. To wait till our men return and then start on schemes of housing, etc., is to court disaster. Most of them will come back in the prime of life. The single men will not long remain unmarried, and they will require a house. It is our manifest duty to provide this. We want the happy homes and the happy families which are impossible under present conditions. The men will come back accustomed to a fairly generous diet and fresh air. Will they agree to herd in cabins which are sometimes little better than sties?

The War is not ended, and we have yet time to arrange for our men; but we must bestir ourselves. We do not require a fresh department for this purpose. To all intents and purposes the necessary machinery already exists in the Local Government Board. But its powers are shackled by red tape. Few of us have the time or pertinacity to carry through a housing scheme in the teeth of the opposition of local interests, backed by the legal subtleties of the Local Government Board by-laws. The housing accommodation of every parish should be reported on by some capable resident. These reports should be carefully investigated by a Government inspector, and if his review of the case is favourable, proceedings should be begun to carry out the recommendations of the report. Speaking from a certain amount of experience, I feel confident that it would be quite possible to select the plans of a dozen cottages and have them standardised, so that they could be erected in any part of the United Kingdom. A price could be obtained in competition, which would bring the cost down to the lowest possible figure compatible with sound work. By having all the buildings erected to one plan the work of supervision would be reduced to a minimum.

But the first thing to be aimed at is the sanction of Government to some scheme which would secure the co-operation of those able and willing to assist, together with the compulsory purchase of land and the abrogation of vexatious and unnecessary by-laws. I believe agriculture is likely to receive much attention from Government, and the scarcity of farm hands will be one of the principal problems. We shall have to devote much time and care to this question, in order that the young and vigorous youths of our country may be induced to settle down in rural districts. We must remember that Hodge is no longer the stay-at-home yokel, whose vision was limited to a radius of six or eight miles. He will be alert in mind and body, used to mechanism, and handy

with tool and pick. He will have mixed with our overseas soldiers, as well as French and American troops. The prosperity of the Colonies, their generosity to settlers, and the allurements of freedom from the humdrum conditions prevailing here, will appeal to the British spirit of independence. Moreover, the minds of the women also have been unsettled. Many have pledged themselves to go as the wives of our gallant soldiers to their homes across the seas. If we do not take steps to make labour on the farms attractive we shall be left with the old, the infirm, and the maimed just at the very moment when we want to employ the flower of our nation's manhood in its largest and most natural industry, and when we are beginning to realise the supreme value of children as a national asset, more precious than gold.

## NEWS ITEMS.

*Change of Address.*

Messrs. Ambrose Poynter, F.R.I.B.A., and George H. Wenyon, M.S.A., notify their removal to 8, Grafton Street, Old Bond Street, W.1 (Gerrard 2487).

*Plumbing Prices at Hull.*

Owing to an advance of 2d. per hour having been conceded to the operatives, the Hull master plumbers have had to increase their charges accordingly. The men are now receiving 1s. per hour.

*Memorial to Sir William and Lady Huggins.*

A memorial tablet to the late Sir William Huggins, O.M., etc., and Lady Huggins, M.R.A.S., executed by Henry Pegram, A.R.A., has been placed in the crypt of St. Paul's Cathedral, and was unveiled on March 29, in the presence of the President of the Royal Society and the President of the Royal Astronomical Society.

*London Memorial to Hospital Workers.*

The nursing staff of the King George Military Hospital, now occupying the premises of H.M. Stationary Office in Stamford Street, S.E., are erecting a memorial of those connected with the hospital and also of those of the parish of St. John, Waterloo Road, who have fallen in the War. The monument will take the form of a lofty pillar of stone, surmounted by a life-size bronze figure of Christ, and will be placed within the precincts of the church, facing Waterloo Road.

*Wages Advance at Sunderland.*

A settlement has been arrived at with regard to the application of the building trades in Sunderland and district for a penny per hour increase in wages. The Sunderland Building Trades Conciliation Board, which was called upon to decide the matter, has agreed that the wages of the mechanics, which are as follows: Bricklayers, 11½d. per hour; joiners, 11½d.; woodcutters, 11½d.; and stonemasons, 11d.—should all be increased to 1s. per hour; and the wages of the labourers should be advanced by a penny to 9d. per hour. The advanced rate will start on May 1.

*Making Cement Waterproof.*

We are asked to mention that a reader whose curiosity had been aroused by repeated advertisements in this journal wished to prove whether Portland cement was really watertight. He constructed two fish-ponds, one with cement and sand, and the other with Pudloed cement and sand. The former required to be constantly supplied with water to maintain

the level, but the other was proved perfectly non-porous. The makers of Pudlo inform us that they will be glad to send free of charge to any interested readers sufficient Pudlo to enable them to make a practical test.

*Town Planning Conference at Birmingham.*

A conference to consider the preparation of housing and town planning schemes, to be placed in operation at the close of the war was opened in Birmingham on March 20 under the auspices of the National Housing and Town Planning Council. The Lord Mayor presided, and said when the brave men came home from fighting our battles, we must take care that they had an opportunity of living in decent homes. He was informed that in the building trade at least 300,000 men had joined the forces or were engaged in munition work, while another 300,000 were doing building work concerned with the war. At the conclusion of hostilities we could not do better than find these men employment in building the houses which would be necessary to accommodate them and the thousands of other men who would be released.

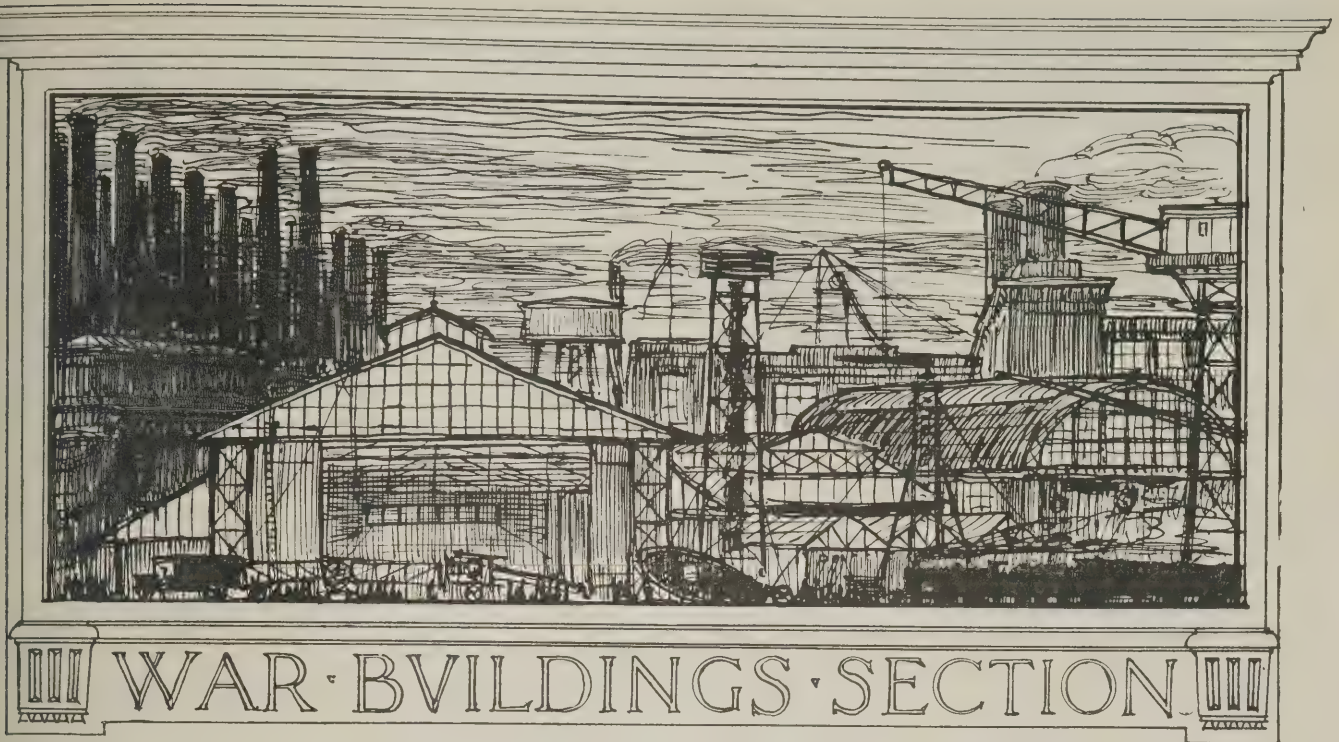
*Builders' Wages in the Derby District.*

Since November last the Derby and District Building Trades Federation have been in negotiation with the Master Builders' Association for increased remuneration and alteration to working rules. An amicable settlement has been arranged. The societies involved are the Operative Masons, the Amalgamated Society of Carpenters and Joiners, the General Union of Carpenters and Joiners, the Operative Bricklayers' London Order and Manchester Order, and the National Association of Builders' Labourers. The awards of the local conciliation board are as follows: One penny per hour advance on the standard rate and a halfpenny per hour war bonus, the latter to cease six months after the war. These awards bring the standard rates of craftsmen up to 11d. per hour, and 8d. per hour for labourers. Also a slight improvement has been effected in overtime rates, the whole to come into operation the first week in May, 1917.

*Memorial Window for Selby Abbey.*

The stained glass window which Colonel Hawdon, senior vicar's warden, is to present to Selby Abbey in memory of his brother, the late Mr. Joseph Hawdon, is being prepared by Messrs. John Hardman and Co., of Birmingham. A faculty has been obtained to insert the glass in the east window of the south choir aisle. The three lights will be designed as follow: The middle light will represent St. William of York (1154), and will contain the arms of the saint. Below this light will be a scene representing the saint crossing the Ouse Bridge at York, and the miracle that took place when the people who fell into the river were saved by his intercession. On one side will be the figure of St. John of Beverley and on the other side St. John of Bridlington. Under the figure of St. John of Beverley (718) will be a scene representing him giving instruction to the Venerable Bede. Beneath St. John of Bridlington (1379) a scene will be portrayed showing the Bridlington Canons beseeching him to become prior, which in his humility he refused. In the tracery will be incorporated the original design of the arms of one of the sons of Edward III. Also the arms of St. John of Beverley and St. John of Bridlington. All the original glass is to be incorporated in the window.





## WAR WORK AND INDUSTRIAL REORGANISATION.

BY THOMAS FOSTER, F.I.B.D.

(Treasurer, National Association of Master House Painters, and President Elect of the North-Western Federation of Building Trades Employers.)

*[Sociologists see, in the new industrial conditions created by the War, a possible means of curing the chronic antagonism between Capital and Labour which of late years has led to so many colossal and wasteful disputes. It has been suggested by economists, and claimed by some sections of the workers, that Labour should be admitted to some kind of co-operative partnership with Capital. If, it is argued, the workers had a more direct share in gains and losses they would take a more sympathetic and a much keener interest in productive activity, and hence would reach a far higher standard of industrial efficiency than can be reasonably expected of them under present conditions. From this change, immense benefits, it is anticipated, would accrue to employers, employees, and the State. Hitherto, however, no practical basis for the discussion of this momentous proposal has been advanced, and this omission our contributor endeavours to supply, without prejudice either to the movement or to its opponents. Of course, in printing this article, we do not commit ourselves to the writer's views, and our columns are freely open to the discussion of the pros and cons of the question.]*

MANY people, among them employers and employees, are agreed in exploring the evils associated with modern industrial conditions. Some have outlined schemes by which they imagine these evils can be removed. Many of the proposals advanced are very suggestive, but none, so far as the present writer has seen, embody any ideas upon which practical discussion can take place.

In this article it is proposed to develop some of the ideas that have been submitted, and to supplement them with suggestions for full co-operation between all who are engaged in the great industry of building.

### *Agreement through Expediency.*

The present, or War-time, relations of employers and employees in the building trade are largely based on the expediency of the moment. There is supposed to be a truce during which strikes and lock-outs are in abeyance. There is no open conflict, it is true, but no one can say the actual relations of the two interests are cordial. For the time being operatives are trying to get as much in wages as the conditions will allow. In this respect there is nothing to distinguish the present from pre-War conditions.

### *Pre-War Labour Unrest.*

In order to realise what the industrial conditions in the building trade really are, it will be necessary to let our minds revert to the state of things prevailing in the

summer of 1914, the months immediately prior to the outbreak of War. Throughout the land there was serious and general labour unrest. Industry was in a state of ferment. Had the War not intervened there were prospects of a general strike of railway workers, in which the strikers would almost certainly have received the active support of the Miners' Federation and the Transport Workers' Union. In the building trade the London strike or lock-out had been in operation many weeks, and in order to bring matters to a head, the National Federation of Building Trades Employers had decided on a national lock-out in support of the London employers. The incidence of the War prevented such a suicidal struggle.

### *The Wage System.*

There is no reason to suppose that the actual relations of operatives and employers have materially improved. Employers are compelled by the force of circumstances to yield to the operatives' demands for higher wages, but it cannot be said generally that concessions are made with a good grace. Their relations are still based upon what one writer has described as "the permanent hypothesis," i.e., the only conceivable basis of remuneration for the operative is that of the wage system. Conditions have changed in one respect. Serious limitations have been imposed by the State upon both employers and employees. These are re-

garded, however, as merely temporary, though some of them will leave an aftermath which will have to be reckoned with when considering developments in the near future.

There are signs, however, that the operative class have begun to do some constructive thinking, and are not merely confining themselves to dissatisfied criticism. For a long time they had not got beyond the idea that the securing of higher wages was their main objective. Now they are formulating demands for much more than wages. They are asking for a larger relative share of the wealth they help to create, while some even suggest relations in the nature of a partnership between Capital and Labour. On both sides there are to be found people of goodwill who are genuinely anxious that the permanent relationship of employer and employee shall be placed upon a more just and satisfactory basis than at present exists.

### *The Main Reasons for Unrest*

are not far to seek. They are partly economic, but, in the main, may be described as psychological. In spite of advancing wages, workmen have found themselves actually poorer. Their real wages, as distinguished from money wages, have decreased. Apart from this important economic fact, they are realising more clearly that their relationship to the employing class is a cash relationship



only. They have a growing consciousness that labour is only a commodity, bought and sold like any other commodity, and that the wage is its price in the market. Like other commodities, their labour when sold passes entirely out of their control. The wage, or price of labour, approximates to the level of bare subsistence, and is far from being enough to satisfy reasonable demands on life's opportunities. All this has brought about a very real division of interest between wage payers and wage receivers, and has set up a state of things which leaves little opportunity for really human amenities in industrial life. This conception of industrial organisation is bolstered up by the orthodox economists who would teach people to accept "the permanent hypothesis," before referred to, as an absolute, unalterable condition. As a consequence, we find that rent, interests, and profits are regarded as first charges on industry, and that wages and the cost of other factors are regarded as minor elements, their prices being regulated accordingly. The operative is realising, too, that he has no status in the organisation of the productive scheme. He receives his orders, and must not question either their wisdom or expediency. For the wages he receives quite a high standard of moral conduct is expected. In fact, he is to give in return nothing short of the very best in quality and amount of service of which he is capable.

It is amusing to hear what employers demand in this connection, when the very essence of business practice is to get off with paying the least price they can for the labour they require. No one can say that this relationship, which Carlyle described as the "cash nexus," is satisfactory, or that it ever can be made permanently satisfactory to human beings.

#### *Organised Labour and Unemployment.*

Another phase of the matter that is impressing itself upon the mind of the operative is the precarious nature of his position. He has seen times of comparative prosperity followed by periods of unemployment. Unless an employer is a man of unusually thoughtful and sympathetic nature, he cannot realise what unemployment means to one whose income never rises above the provision of the minimum of things required to enable a family to exist. Organised labour has taken various steps to guard itself against this evil. One of its formidable weapons is restriction of output. By curtailing the amount of the product of labour, it has been thought that work would, as a consequence, be prolonged, and also, that when occasion arose to make new bargains about wages the operative would be in a stronger position as against the employer.

#### *Restriction of Output and the Materialistic Spirit.*

The policy of restriction of output, like many other lines of social conduct, reacts very detrimentally upon society. One economic result is a lessened supply of many of the things that operatives themselves are in need of, and to that extent the purchasing power of their own wages is reduced. It also has its reactions in the moral sphere too, for in any of the legitimate occupations of life it is not a good thing for a man to do less, or poorer work, than the best he is capable of. In the nineteenth century two men in particular did much to unsettle the public mind as to the wisdom of the materialistic spirit that dominates industry. John Ruskin and William Morris both criticised the soulless doctrines of the economists of the Selfish

Age, and each strove in his own way to lead society to a better realisation of its obligations. Partly as a result of their teaching, many people have been led to experiment with various forms of industrial co-operation, but none of them can be said to have been generally successful. Perhaps the idea of co-partnership is the most popular of the proposals that have been put forward. In a few instances it has achieved a measure of success, but there is an instinctive attitude of suspicion on the part of the operative towards it. The application of the principle may benefit the few who participate in such schemes, but it results in keener competition between groups of workers, and so far is a disintegrating force which trade unionists regard with quite natural alarm.

#### *Why Not Extend War-Time Co-operation?*

Before any radical change in industrial relations can take place, many preconceptions will have to be dropped, and the solution of the problem approached from an entirely new point of view. At present the object for which a man engages in business and employs other men is to accumulate as much money for himself as possible, and the popular measure of a man's success in life is the amount of money he has been able to accumulate. The writers above referred to led a strong revolt against this doctrine and its implications, and tried to show that the only real justification for the operations of business is the service of the community, work for the common good. This idea was slowly permeating the British mind when the War broke out and caused an acceleration of thought in this as in other matters, that might have taken a century of moral suasion to bring about. We have realised the absolute necessity for national service and co-operation for the purposes of war. The instinct of self-preservation in the face of grave and immediate national danger, has decided that to a great extent the worst practices of both employers and employees shall be dropped, though in both directions there is an understanding that pre-War facilities for mischief shall be restored. One fails to see why they should. In fact, many people are asking why, if the abrogation of the old evil practices is good for this time of stress, it should not also be good in times of peace.

#### *Dividing the Products of Industry.*

From the foregoing attempt to diagnose the cause, or causes, of industrial unrest, it will be seen that the two principal points involved are the distribution of the products of labour and the status of the labourer. These factors are so inseparably bound up that one cannot be considered apart from the other when trying to devise a solution of the problem. The first thing that must be realised by the employing class or their future equivalent is that they will have to be satisfied with a much less relative share of the wealth produced by industry, the operative class receiving relatively more. There can be no other way as long as the classes exist. The division of interest that now exists will have to be removed, and the first step towards its removal is a frank recognition that a better way of dividing the products of industry is not only desirable, but is also possible. The day has gone for ever when the operative can be put off with what an employer is prepared to "give." The operative considers that he has a rightful interest in the product of industry, and it is upon the apportionment of the relative interests in the product that thought needs to be con-

centrated. The machinery for bringing about a practical solution of our problem already exists in the organisations founded by employers and operatives for the protection of their respective interests.

Both classes of organisation are, in law and in practice, trade unions, yet what a misnomer the title is! It is really a case of organised trade disunion. In the main, employers and operatives are organised for purposes of aggression and defence against each other, and seldom come together except during the progress of a fight. What a waste of energy and ability this represents! If it can only be realised that a industry is only a form of national service in which it is the duty and privilege of all to co-operate, we shall have a new motive for industrial activity that will indicate the direction in which trade organisation should proceed.

#### *The Craft Guild Solution.*

Some of the keenest constructive thinkers of the present day go back to the craft guilds for their idea of how the industry of the future should be regulated, and find in a modern application of the guild principle a solution of our troubles. Chief among these are the writers in the "New Age," who are also the authors of that most helpful book, "National Guilds: An Enquiry Into the Wage System and the Way Out," and A. J. Pentty, whose book "The Restoration of the Guild System," ought to be reprinted. The methods of the old craft guilds cannot be applied in their entirety to the conditions of present-day industry, but the suggested application of the principle of craft-co-operation cannot be lightly dismissed.

In their day the guilds were responsible for the standard of craftsmanship, as well as for the remuneration and status of those engaged in the craft. The question of commercial gain did not then occupy the premier position in industry that it does to-day. The guilds had their charter under which they were given considerable powers of self-protection, but they also had their obligations of service to the community clearly set forth or implied. In each guild were masters, journeymen, and apprentices; and all were subjected to some test of fitness before they could pass from one grade to another. In the building trade as now organised, we find masters in the position of employers who are financiers and nothing more. Firms thus constituted are probably the most detrimental factor the trade has to contend with. In any future scheme which has the command of the respect of the public and the confidence of the operative, this factor will have to be eliminated.

#### *Compulsory Trade Unionism!*

Following up the suggestion that existing organisations of employers and operatives shall form the nucleus of a better future organisation, it becomes necessary to consider a complete change of function for them. Generally speaking, if we except some of the larger firms, in addition to the financial ventures referred to in the previous paragraph, the employer fulfils the dual functions of owner and chief manager of the business, while members of the operatives' unions are the journeymen and labourers employed. A first condition for the success of any scheme of co-operation between the two organisations is that all employers and operatives in the building industry must be members of their respective unions. This can only be brought about by legal enactment. Only in this way will it be possible to bring the two elements on both sides under the discipli-



that is necessary to secure the desired results. The reasons for this suggestion are perfectly obvious to all concerned. It will also be necessary that all agreements arrived at between the organising and operative sections of the trade shall have the force of the law. It follows, of course, that before this legal sanction can be given, it will have to be shown that no such agreement is detrimental to the public interest. In its overseeing function, the State becomes, in effect, a partner in management.

The remuneration of capital sunk in the industry would be a rigidly fixed percentage, to be determined in the last resort by the State when granting its charter. In the case of all capital required for what is now regarded as public service, this principle is already accepted. There should be no difficulty in extending it to include the capital needed in industry.

#### *Capital and the Human Factor.*

Capital, *qua* capital, is inert, and of itself can render no service. The human factors that use capital are those whose services are to receive the main consideration. The operative section of the trade would receive pay upon such a scale as would allow a decent living to every individual concerned. The pay might be dispensed weekly by the employer in return for an agreed number of hours' service while the operative is in employment. Provision would, of course, be made for the higher remuneration of exceptional skill, or responsibility in the case of foremen or others. The employers or organisers would also be paid upon such a basis as would be found necessary to retain the services of thoroughly competent men. They might not receive as much as possibly as some of them do now when the present element of profit is taken into account; but they would be compensated in any way that cannot be measured in terms of money by the more satisfactory working of the industry, and by their greater security against financial disaster. Over and above these payments it is presumed that a margin would be left which would correspond in some respects to part of that which is now regarded as profit. This might be apportioned as to the smaller moiety to the employers' or organisers' association, part of which might be paid over as bonus by the association to the managers of firms who had proved most efficient during the year. The larger portion of the surplus would go to the unions of operatives, their numbers being so much the greater. These allotments to the operatives' unions might be found to suffice for all purposes, or it might be necessary to supplement them by a levy on members. Most likely the allotments could be found sufficient. Upon the operatives' unions would fall all the responsibility for maintaining their members in times of unemployment or sickness; and in these times they ought to receive the equivalent of full pay. We must remember that the commodity idea of labour would have gone by the board, and there is no inherent reason why a workman should be denied regular pay while a manager is entitled to it. The unions could also provide adequate maintenance for members when no longer able to work by reason of old age, or accidental disablement. This would abolish the need for Labour Exchanges and State Insurance, both of which are regarded with strong disfavour by the operative class. The proposed method of remunerating labour gives the unions new and valuable functions and recognises the principle that

each industry ought to provide fully, in health or in sickness, for the adequate maintenance of all engaged in carrying it on.

#### *The Radical Cure for Ca' Canny.*

The foregoing is of necessity only a brief outline of principles which, if applied, would remove from our industry many of the reproaches which are now levelled against it from within and without. The principle of sharing the products of industry upon a juster basis is introduced, and the moral reactions resulting from the change would be in the direction of better service all round. One great factor which is inimical to production of the best work would be removed; for no one would be harassed by the feeling of insecurity arising from the financial exigencies of our present system. No man can do his best work while such worries are present. Any tendency to wilful slacking on the part of an operative would soon be suppressed, for the collective public opinion of his union would be brought to bear upon any member who was disposed to ca' canny. If that were not enough, the union would have power to use more drastic means of bringing home to him a proper sense of duty. If the necessity ever arose, the same principle might be applied in the case of a member of the managerial section of the trade.

#### *The Commercial Side.*

On the commercial side it would be necessary that accounts should be kept upon a proper system, and periodical audits would be necessary in the case of every firm. The registration of firms, either large or small, upon the basis of limited liability would facilitate these financial operations. Probably this requirement would tend to bring about a reduction in the number of separate firms, but this would make for efficiency and better organisation, and would be a gain to the industry as a whole. Many businesses nowadays are too large to give that attention to detail and quality that is essential to the realisation of our ideals, while on the other hand there are far too many small businesses carried on by weak, incompetent men, who find their clientèle among that class of people who want a cheap thing, irrespective of quality. Many men now in business on their own account would be far better and more profitably employed as managers or foremen; and some even as journeymen.

#### *The Building Trades Guild.*

The employers' or organisers' association would have its meetings of members, both national and local, to consider its corporate business, and to provide opportunities for mutual education by discussing the technicalities of management and any other subject pertinent to their work. The operatives would also have their meetings to deal with the phases of industry that mainly concerned them and for the appointment of their own officials. Provision would have to be made for a joint association of both sections of the industry, and this might be called "The Building Trades Guild." Its functions would be to correlate the two sections of the industry, and to deal with all questions of policy concerning the trade as a whole. Not the least of these would be the provision of suitable technical training for those who came to the trade as apprentices. It would also be responsible for the audit of the accounts of the employing firms as well as those of the operatives' unions.

It has already been urged that the scheme as outlined is revolutionary. Of

course it is, and the circumstances demand a revolution in thought. It must be remembered, however, that of recent years many proposals have been put forward for the better organisation of industry. The Socialist or Collectivist proposals have met with many adherents among the operatives, and not a few among employers. The enormous increase of bureaucracy following the application of the collectivist principle in State Insurance, Labour Bureaus, etc., just before the War, and in the organisation of industry since the War, has given pause to many who previously regarded the collectivist proposals with favour. Bureaucracy seems to be inherent in the application of State management, and a timely recognition of this fact has determined many former advocates of collectivism to have as little of it as possible. On the other hand, the suggestions of the Syndicalists met with a considerable amount of favour in some quarters for a time; but they are now generally regarded as impracticable and find few adherents. Those who have looked upon the various co-partnership and welfare schemes as panaceas for our industrial ills have also failed to convince either operatives or employers of their value. Out of the melting pot into which these and other ideas have been thrown new proposals are emerging. The suggestions contained in this paper owe something, directly or indirectly, to all the sources that have been referred to, as well as to a long business experience. They are now submitted as a basis for consideration and discussion upon which some superstructure may be reared that shall be the means of removing the abuses and injustices which the more thoughtful among the employers and the operatives would gladly see removed.

#### *A National Industrial Parliament.*

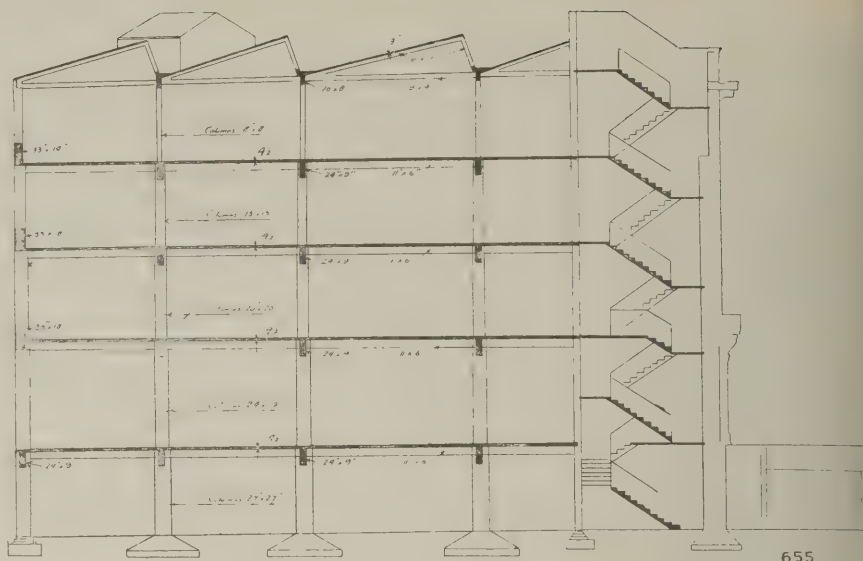
Within the trade there is evidence of a desire to get together with a view to preventing the trouble that so many people seem to expect after the War. The National Associated Building Trades Council, practically a federation of operatives' unions, have put forward proposals for the setting up of a National Industrial Parliament for the Building Trade. Here, ready to hand, would be the machinery for the discussion of the working proposals now put forward. It remains for the Federated Employers to meet the operatives in the spirit of *noblesse oblige*, which ought to actuate all those on whom the responsibilities and obligations of employers have devolved. If these obligations are fully realised they will seek to out-do the operatives in the effort for the betterment of all who are engaged in an ancient and honourable industry, and in the perfecting of its service. It is with sincere desire to assist the discussion of proposals for the reconciliation of hitherto conflicting interests that these suggestions are advanced; and whether they are accepted or some better plan is found, matters cannot any longer be allowed to drift in the old sweet way.

[In the editorial comments upon this article we have carefully refrained from criticism, because it seems only fair to the author to leave his case unprejudiced either one way or the other, so far as this journal is concerned. If the proposals which the author himself frankly admits to be "revolutionary" cause a "fluttering of the doves," and excite vehement opposition, there can be no harm in that. Quite the contrary; for in all such matters the first step towards reform is a strong excitation of thought, and even strong opposition is better than apathy.]



# A MOTOR-CAR WAREHOUSE AND SHOWROOMS.

One of the most remarkable features of the War has been the development of motor transport. For all military purposes the horse is now largely displaced by mechanism. This change has, of course, given a tremendous fillip to the motor industry, which is now enjoying an unexampled prosperity. The demand for greatly increased construction has resulted in the erection of large numbers of new and extensive premises, some interesting examples of which have recently been illustrated in the Journal. For the Daimler Company a large building, comprising a warehouse and showrooms, has recently been completed in Store Street, Tottenham Court Road, W.C., from the designs of Messrs. Taperell and Haase. In a building of this type the principal requirements are fire-resistance, ample lighting arrangements, adequate facilities for the entrance and exit of cars, and a floor area as free as possible from piers and columns. All these conditions have been ably met in the present example. The structure, which is irregular on plan, consists of a basement, ground floor, and three upper floors, all of which, except the basement, are constructed in reinforced concrete. The very great advantage of this method of construction in a case where large and comparatively uninterrupted floor spaces are required is clearly shown. The desired result has been obtained by the employ-



MOTOR-CAR WAREHOUSE AND SHOWROOMS, STORE STREET, LONDON, W.C.:  
TYPICAL LONGITUDINAL SECTION.

ment of long span beams, the number of supporting piers being thus reduced to a minimum, and offering no obstruction to the movement of cars. The secondary beams in the structure are haunched at the supports in order to provide for the negative bending moments at these points. The roof, as will be seen from the accom-

panying longitudinal section, is of the north-light variety, carried out in reinforced concrete. It is a simple structure, a notable feature being the entire absence of interior ties and struts, in consequence of which a maximum amount of light is obtained.

Architecturally the building is quite



MOTOR-CAR WAREHOUSE AND SHOWROOMS, STORE STREET, LONDON, W.C.

TAPERELL AND HAASE, ARCHITECTS.



success, the difficulty of providing a dignified architectural framework to unusually large window spaces having been satisfactorily overcome.

The reinforced concrete work was carried out to the designs of the Indented Bar and Concrete Engineering Co., Ltd. It may be mentioned that the adoption of reinforced concrete construction in this case has resulted in a not inconsiderable saving in fire-insurance premiums. It is obvious that the value of the contents of the Daimler Company's showrooms may easily run into many thousands of pounds, whereas the value of the contents of the floors where the fire risk is greater would be comparatively insignificant, although, had the construction been "non-fireproof," the increased rate on the latter would apply also to the former. It should be remembered that in reinforced concrete structures the contents of each floor are insurable separately, whereas in "non-fireproof" buildings the highest rate governs the whole structure.

### ELECTRIC LAMP GLASS REGULATIONS.

The Minister of Munitions has issued the following Regulations:—

(1) No person shall manufacture any electric lamp glass unless the purpose for which such glass is required has been approved. Such approval must be evidenced by one or other of the following, which

must be quoted by the ordering firm to the manufacturer, together with the purpose for which the glass is required:—

(a) Reference to and number of an Admiralty, War Office or Ministry of Munitions contract for which the glass is necessary; or

(b) A certificate authorising the supply issued on behalf of the Minister of Munitions by the Director of Optical Munitions and Glassware Supply.

(2) Manufacturers of Electric Lamp Glass are required to render to the Director of Optical Munitions and Glassware Supply at regular intervals full and accurate returns of their manufacture and output of electric lamp glass in accordance with the directions from time to time given.

(3) No person shall buy, sell or deal in any electric lamp glass situated or to be manufactured outside the United Kingdom unless a certificate authorising such purchase, sale or dealing has been issued on behalf of the Minister of Munitions by the Director of Optical Munitions and Glassware Supply.

(4) For the purpose of this Order Electric Lamp Glass shall include all glass intended for use in the manufacture of electric lamps except glass used or intended for use in lamp caps for insulating purposes, but shall not include glass shades and similar accessories.

(5) All applications in reference to the above Order should be made to the Director of Optical Munitions and Glassware Supply, Ministry of Munitions of War, 117, Piccadilly, W.1.

### THE INSTITUTE OF BUILDERS.

At the thirty-third annual meeting of the Institute of Builders, held on March 7, the annual report was presented, and the usual formal proceedings in connection with the election of Council and officers were transacted, the following being elected: President, Mr. G. Bird Godson; Vice-President, Mr. F. Shingleton; Hon. Treasurer, Mr. F. G. Rice; Hon. Auditors, Messrs. E. M. Sharman and F. Wall. The following were elected to fill vacancies on the Council: Messrs. F. M. May, R. J. Holliday, H. Willcock, Jas. Storrs, and G. M. Burt.

In the course of the report, attention is called to the difficulties under which the business of such an organisation as this has to be carried on at the present time, but regardless of the innumerable calls made upon its members in other directions the Council has found time to discuss and dispose of many questions of importance that have presented themselves during the year.

A number of members and sons of members are on active service; some have been honoured with war distinctions, many have been seriously wounded, and some have made the supreme sacrifice.

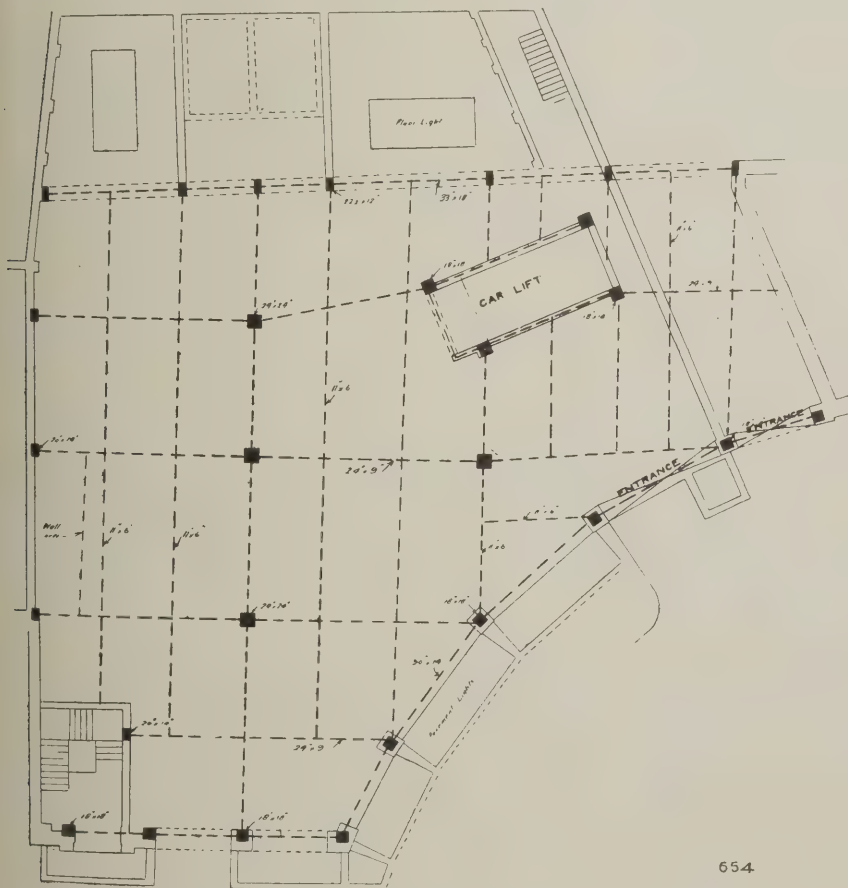
The important question of apprenticeship and technical education has been carried a considerable step forward. As the result of conferences between the London (Central) Advisory Committee for Juvenile Employment and representatives of the employers and trade unions of the building trade, a scheme, originally drafted by this Institute, was discussed, with the result that a scheme of apprentice training has been evolved, which it is hoped will be adopted for London and form a model from which other schemes may be adapted suitable for the various provincial districts, seeing that the National Federation of Building Trades Employers has approved it. The Council has in many ways endeavoured to encourage boys to choose the building industry as their future life-work and means of livelihood.

Negotiations for a form of sub-contract, for the use of builders with their own sub-contractors have been carried on during the year by a joint committee representing this Institute, the National Federation of Building Trades Employers, and the Confederated National Association of Master Plasterers, Plumbers and Slaters, resulting in an agreed document which will shortly be submitted to the respective main bodies concerned with a view to its approval and adoption by them.

The Council, looking to the future, has taken up the question of organisation with a view to enlarging the scope and usefulness of the Institute, and substantial progress has been made in the preparation of a scheme, the object being to raise the standard of technical qualification required in the industry, and so improve the status of those engaged therein.

The Council has been fully alive to the serious condition of affairs brought about by the restrictions imposed upon building work by the Orders of the Government, and has co-operated with other bodies in making representations thereon.

There is a change to record in the secretaryship of the Institute. Mr. Costigan, who has for many years occupied that office, having retired for reasons of health, the Council has appointed Mr. A. G. White, of Pen Corner House, Kingsway, London, W.C.2, to succeed him. Communications should be sent to Mr. White.



STORE STREET

*Ground Floor Plan.*

MOTOR-CAR WAREHOUSE AND SHOWROOMS, STORE STREET, LONDON, W.C. :

GROUND-FLOOR PLAN.

TAPERELL AND HAASE, ARCHITECTS.

# ENQUIRIES ANSWERED.

## Contents of Concrete Base.

X. Y. (Lancashire) writes: "I shall be much obliged if you will inform me the correct method of obtaining the cubical contents of the figure enclosed [not reproduced]."

—The block of concrete of which the contents are required is 11 ft. square, with 1 ft. in height, carried up parallel, and then a further height of 2 ft. 6 in. tapered off to 2 ft. 6 in. square at the top. The contents will be those of a solid block and pyramid minus the small pyramid completing the figure. The full pyramid will

be  $2.5 \times \frac{11}{11 - 2.5} = 3.235$  ft. high, and the small pyramid  $3.235 - 2.5 = 0.735$  ft. high. The contents will then be  $11 \times 11 \times 1 + 11 \times 11 \times 3.235 \times \frac{1}{3} - 2.5 \times 2.5 \times 0.735 \times \frac{1}{3} = 121 + 130.478 - 1.531 = 249.947$ , say 250 cubic feet.

HENRY ADAMS.

## Increased Cost of Building.

A. A. R. (London, N.) writes: "Taking pre-war cost as a basis, could you give information as to the comparative extra percentage of cost of new building in hand during September, 1915, and a corresponding period of last year? The point concerns business premises in London of the factory type."

—Without knowing more details of the construction and the relative quantities of various kinds of material employed, it is

impossible to give any reliable figures for the increased cost of building in the last twelve months. Perhaps an average of 20 to 25 per cent. may be taken as somewhere about the mark, due chiefly to the great rise in the cost of labour.

HENRY ADAMS.

# A REINFORCED CONCRETE FACTORY.

The factory illustrated on the double-page plate in this issue, and also by the plan on this page, is a building containing basement, ground, first, and second floors. The area of each floor is 22,400 ft. super, with columns placed 20 ft. apart lengthways of the building and 26 ft. 8 in. across the building. Exit staircases are provided at each end of the structure, and two automatic lifts serve each floor. The maximum amount of lighting is obtained, the top floor, in addition to side lighting, having north lights.

The whole structure is of reinforced concrete with the exception of small filling in panels under the windows, which are of 9-in. brickwork. Between the staircase and the lift at each end of the building are placed side stores on the mezzanine floors, and lavatories in a convenient position lead off the same level as the factory floor.

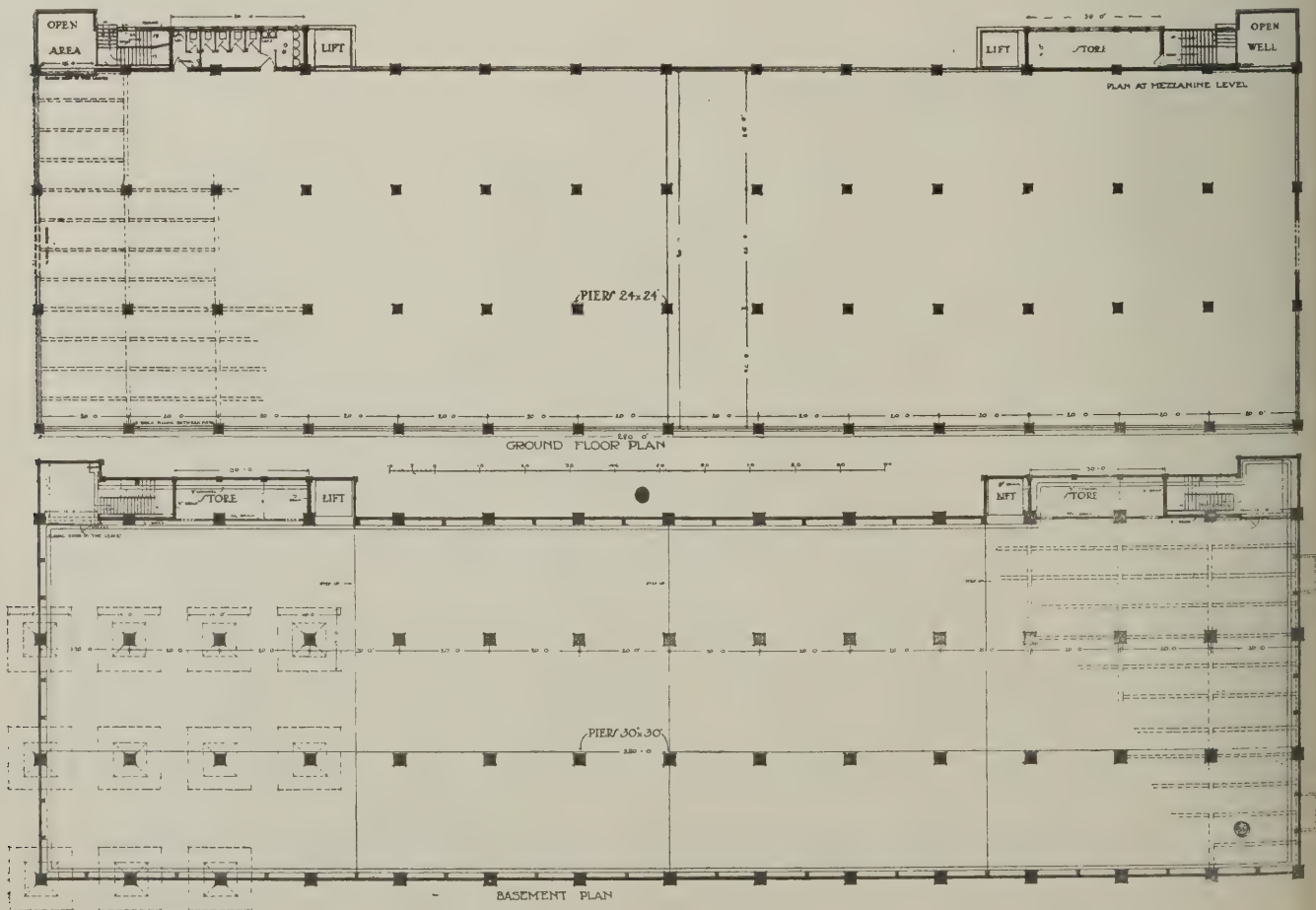
The north light portion of the roof is glazed with concrete glazing bars, the south portion of the roof being of reinforced concrete and covered with mineral rock asphalt.

Mr. A. Alban H. Scott is the architect.

# OBITUARY.

## Mr. W. H. Ward.

The death took place, on March 15, at his residence, 65, Sandon Road, Edgbaston, of Mr. William Henry Ward, who for more than fifty years was a well-known architect in Birmingham. Born in Scotland in 1844, he came to Birmingham in 1865, building up a large practice, which he carried on until the early part of 1911, when he retired in favour of his son. Soon after the war broke out Mr. Ward, jun., who was an officer in the Territorials, was called up, and his father returned to the office, carrying on the business until the recent illness which resulted in his death. Mr. Ward designed the Dudley Road Infirmary, the City Sanatorium, in Yardley Road, as well as the one at Salterley Grange, Cheltenham, and also the City Hospital at Little Bromwich. Among other important buildings which were erected to his designs were the Great Western Arcade, the Grand Theatre, the Union Offices in Edmund Street, Lincoln's Inn Buildings, and several of the principal hotels and restaurants. He restored Maxstoke Castle for the late Sir Charles Featherstone Dilke, parts of Warwick Castle for the late Earl of Warwick, and a number of churches were built or restored in accordance with the plans he prepared. Amongst other work he built the public market in Mexico. Fond of sport from his youth, he had few equals as a shot, was a keen cricketer, and a renowned boxer.



A REINFORCED CONCRETE MUNITIONS FACTORY: BASEMENT AND GROUND-FLOOR PLANS.

A. ALBAN H. SCOTT, ARCHITECT.

(See double-page Plate.)



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

APRIL 11, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1162.

THAT we have now a Minister of Education is, in the mere creation of the office, an augury of immense significance. It means not merely that in future the whole business of education will be conducted more systematically and more efficiently, but that the public attitude towards education will be greatly changed. Education of any sort is much too lightly valued by the public, who are tempted to think that it cannot be worth much, because most of them get it for nothing. Moreover, as far as they can see, it usually leads to nothing. It seems to them that a boy's prospects are nowise the better for his six or seven years of schooling. Without it, he would have made, they think, just as good a bricklayer, carpenter, plumber. They think that the fruits of so much effort should be more tagible, more abundant, more immediate, and less liable to be gathered by the employing class. For them education is merely earning capacity, and, rightly or wrongly, they have a rooted conviction that the employer gets the chief benefit of it.

As with elementary education, so with technical. Young artisans will roundly tell you that a hundred-to-one chance of promotion is not a sufficient inducement to spend their leisure at evening classes. Superior workmen who would make excellent technical teachers refuse to undertake the work because it is so ill-paid. Most of them must do a full day's work before they are at liberty to teach; and they feel that the dual capacity not only makes too large a draught on their energy, but robs them of the relaxation and the social enjoyment to which they are entitled. For this reason there is a chronic shortage of really practical teachers of technology; and the obvious remedy is to make it worth the while of the best men to come forward. Whole-time teachers must be the rule rather than the exception, and their salaries must exceed appreciably the wages they could earn as workmen. Since teaching is an art that must be somewhat laboriously acquired, means of training the teachers of technology must be devised or amplified. Experiments in this direction have been recorded in the Journal. They have arisen, however, from sporadic and independent effort. It is necessary, we conceive, to establish a national system of training centres for technological teachers.

It is surely reasonable to anticipate these reforms; and we think that the apprenticeship scheme that has been prepared by the Institute of Builders should be carefully adjusted to fit. As the inception of this scheme was prior to the new movement in education, its provisions may require considerable modification, but it should nevertheless be extremely useful and suggestive, both as a possible basis of reform and as tangible evidence that employers are awake to the importance of the subject and are earnestly seeking a way out of the chaotic conditions that have arisen from the lack of systematic organisation and control. Before the war, the dearth of competent workmen had become sufficiently serious, and doubtless it has been greatly aggravated by casualties. There is all the greater necessity for exhausting every possible means of developing to the utmost the skill of the boys who are now at school, and to do this effectually it will be essential not only to employ new methods of teaching,

but to stimulate an ambition of good craftsmanship, and to provide means for the higher education of pupils of exceptional promise.

For reasons that are more easily understood than justified, the education of the working builder has not hitherto excited much attention from the architect; who, however, whether or not he cares to admit it, is greatly concerned in it, and who might, if he would, do a great deal to advance it. In the R.I.B.A. "informal discussions" on the education of the architect, the education of the craftsman was, so far as we are aware, left untouched. This was quite in accordance with precedent, if not with tradition; but did it not show a certain insensitiveness to the new spirit? Or do we misconceive that spirit in supposing that it makes for co-operation and mutual helpfulness rather than for pharisaism and aloofness? We think that architects and builders could and should help each other more than they do. In France, the architect watches over the interests of the workers with a sort of paternal solicitude, and gains, rather than loses, in dignity and respect through the kindly interest he takes in their welfare. Might we not with advantage establish a similar relationship in this country? In the matter of technical education, the architect and craftsman could render each other signal service. Indirectly, they do it already, by casually "picking up wrinkles on the job." Could not this interchange be systematised? It is a common practice for the student engineer to take off his coat in the machine-shops. Much more rarely do we hear of the student architect practising at the bench; but we are convinced that those who have the courage thus "to endure hardness" are much the better for the experience. They may not acquire a high degree of manual dexterity—it is not necessary that they should—but they certainly get nearer to the heart of things; and, incidentally, they obtain a valuable insight—not otherwise to be acquired under present social conditions—into the psychology of the operative.

Professional and technical education—indeed, education of all kinds—having been cast into the crucible, it is surely opportune to suggest that the education of the builder should be regarded as a whole, not considered piecemeal; as if its diverse parts were unrelated. Classification must be retained, for it is essential to system. Equally essential is the correlation of parts; and it is because the various parts have been too much regarded as separate and independent entities that its results fall so lamentably short of what might be achieved by more economic adjustment and more harmonious interaction. Otherwise the machinery of education must continue to be defective, and we cannot afford, as a nation, to continue the resultant enormous waste of power. Leading professional and practical men should meet in conference on this subject, with the object of drawing up a scheme of education that shall be comprehensive, homogeneous, and in every sense of the word economical. It should also boldly break away from rooted prejudices and effete traditions, and make for solidarity and unity. And in town-planning the education of the builder, all roads should converge on a reformed and re-vitalised



university whither all may go who deserve to, independently of the "few rascal counters" which D'Israeli anathematised for their frequent failure to coincide with intrinsic merit.

\* \* \* \*

Much of the interest of the final report, issued on April 2, of the Departmental Committee on Education was discounted by the fact that most of its conclusions had been already made known through inspired paragraphs in the Press, and through the public utterances of educationists. These leakages served the excellent purposes of provoking discussion (which on the whole has been highly favourable to the suggested changes) and of preventing the antagonism that might spring from the shock of surprise. Consequently the main proposals—that all exemptions from attendance at school up to the age of fourteen shall be abolished, and that between the ages of fourteen and eighteen pupils must attend day continuation classes—had become familiar enough to the public mind long before the report was issued; and, indeed, education reformers have been insisting upon them for the past forty years or more. It is not to be supposed that these reforms will be allowed to take effect without a fight comparable in bitterness to that which delayed the passage of the successive Factory Acts. It cannot be denied that the withdrawal of child labour will hit many industries very hard, but we have every confidence that those of them best worth preserving will make a good recovery. At all events, the War has taught us that sectional interests cannot be allowed to act detrimentally to the national welfare. It is realised more clearly than ever before that no industry, whatsoever may be its magnitude and importance, can be allowed to stunt the minds and bodies of the people. Cheap calicoes, or cheap bricks, are extravagantly dear at the cost of the national health and intelligence; and if the withdrawal of boys and girls from the textile factory or the brickfield is a vital necessity of national welfare, the consequence that our calicoes and our bricks must cost us more is but an inconsiderable trifle in the comparison of relative values. There is, of course, the question of our ability to compete with the foreigner successfully under the altered conditions; but we are confident that in the long run the cultivation and employment of superior vigour and intelligence will serve us infinitely better than the exploitation of immature strength and faculty with ruin in the use.

\* \* \* \*

Recommendations with which architects are more intimately concerned are that "more manual instruction of various kinds is needed for both boys and girls"; that "steps should be taken by better staffing and other improvements in the upper classes of elementary schools to ensure the maximum benefit from the last years of school life"; and that "it should be an obligation on the local education authority in each area to provide suitable continuation classes." These reforms, it is superfluous to say, involve considerable modifications in the planning of schools—for example, more private rooms and other accommodation for the increased staffs; and the provision, probably, of workshops in every large school, or possibly the erection of central technical schools for each district. Larger staffs and extended functions imply larger schools or more of them, as well as the smaller classrooms upon which educationists have so long insisted; while, in the corollary, heating, ventilation, lighting, sanitation, and equipment must be adapted to the new requirements. It is estimated that the necessary expenditure on converting all half-timers into full-timers, and keeping all children until fourteen, will amount to a million and a quarter sterling. This will come to builders and furnishers in respect to alterations only, and does not cover the cost of new build-

ings, which the committee shrink from estimating. Altogether, what with the vast operations in factory building, the overtaking of arrears in housing and church building and restoration, and the modification and erection of all types of schools, builders, after the war, are pretty certain to experience a period of quite unprecedented and almost overwhelming activity.

\* \* \* \*

Certain correspondents promptly challenged our announcement, made some months back, that the endowment of a Chair of Architecture at Sydney University amounted to £2,000 a year. Such liberality seemed to them to be too good to be true—surely, said one of them, we must have made a mistake. It could not be £2,000 a year, but the interest on that sum! True, they said, the best interest that could be got from an investment of £2,000 would not amount to a princely fee for the professor, but it was nevertheless the more conceivable hypothesis. But we made no mistake—£2,000 a year it is; and our Sydney contemporary "Building" states that it is to be allocated as follows: One professor, £1,100 per annum; one assistant, £250 per annum; apparatus, £650 per annum. It is a curious commentary on the estimation in which architecture is held in this country that the figure we gave seemed incredible. Many a professor of "the humanities" gets twice as much for services that are nowise more important. On the other hand, we doubt whether our few occupants of architectural Chairs get half as much. They have, it is true, opportunities for practice; but it is hardly fair to them to take this fact into account. University Chairs of all kinds depend mainly upon the generosity of some "pious founder," and hence there is wide discrepancy in the emoluments; but an important point about the Sydney Chair is that it has been endowed by the Government. If our own Government, impoverished by the War, is for some time to come incapable of endowing University Chairs, the least it can do is to ordain that existing endowments shall be more equitably distributed—that unnecessary Chairs shall be abolished, and new Chairs established instead.

\* \* \* \*

Property owners are taking alarm at the headway that is being made by the more democratic propaganda in respect of the housing question. Delegates from trade unions and co-operative societies were prominent at the housing conference held at the end of last month at Manchester, and, indeed, are notably active in many directions. It is feared, therefore, that the workers and their town-planning friends are in a fair way to assume control of the movement, and to get hold of such monetary assistance as the Government can be persuaded to lend. Private builders and developers conceive it to be not only unfair that they should be thus summarily eliminated, but unwise and uneconomical to dispense with their special knowledge and experience in a field in which they have rendered signal service. If, by reason of financial stress, they are unable to resume their excellent work, housing activity would suffer from the loss of their expert skill, from the diversion of their capital to other investments, and from the absence of the healthy and stimulating competition with which private enterprise checks and corrects official sluggishness of action and extravagance of expenditure. On the other hand, the subsidising of private enterprise, though it is a common enough expedient in other countries, is unfamiliar in our own, and on that ground is sure to be strenuously opposed. It is to be observed, however, that the question is not that of subsidising private persons mainly for their own benefit, but mainly for the advantage of the community, and to meet a special and an urgent need.



## THE PLATES.

*Prison Ship Martyrs' Monument, Brooklyn, New York.*

THE custom of using an isolated column for a monument, first introduced by the Romans, has been consistently upheld by architects ever since. The practice is not one to be wholly commended, since an impression is almost invariably produced of detachment and incompleteness, for we cannot help associating with a column the idea of a superincumbent mass. It cannot, however, be denied that some very fine effects have been obtained with this motif, many within quite recent times. An

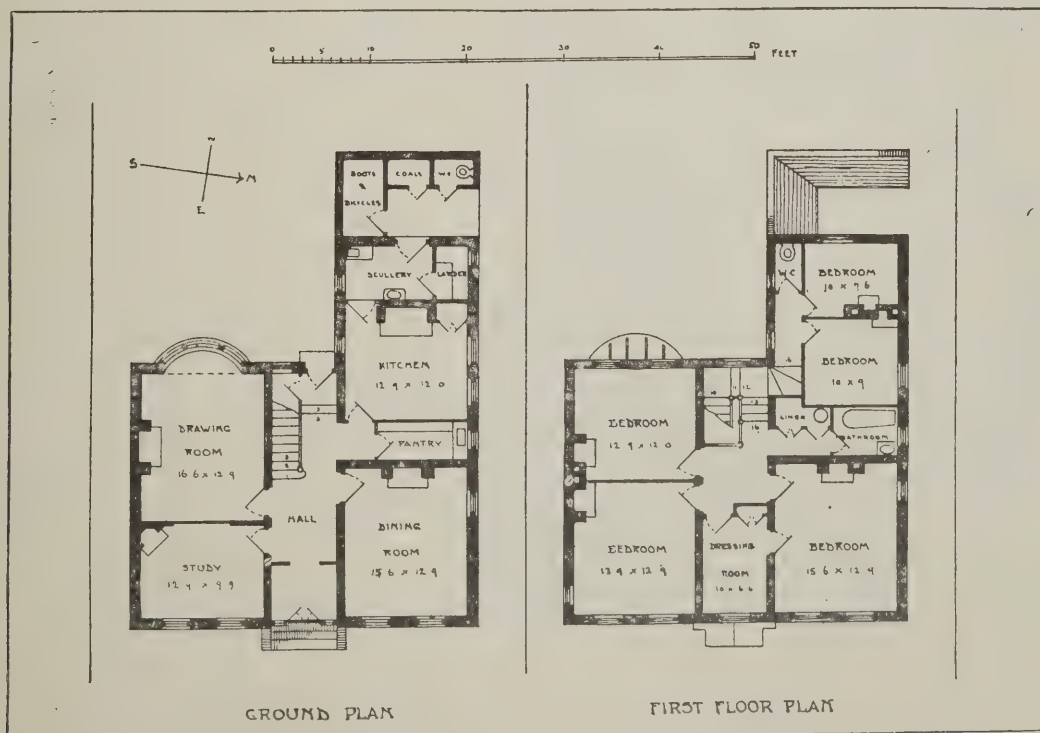
excellent example is provided by the Prison Ship Martyrs' Monument, Brooklyn, New York (designed by McKim, Mead, and White), illustrated on a plate in this issue. Here we have as the objective of three magnificent flights of steps a huge Doric column surmounted by a great cresset. The whole monument is characterised by refined taste and bold execution.

*House at Gidea Park, Romford, Essex.*

In the majority of our modern garden suburbs the houses are mostly of the country cottage type, having a comparatively small amount of window space and an abnormal proportion of sloping roof. It is quite refreshing, therefore, to come across a departure from stereotyped practice such as Mr.



General view of rear elevations.



HOUSES IN HEATH DRIVE, GIDEA PARK, ROMFORD. RONALD P. JONES, ARCHITECT.

(See also Supplementary Plate.)

Ronald P. Jones's houses at Gidea Park, one of which is reproduced on a plate in this issue. There are four of these houses in a row, and, in order to introduce a little variety, the two centre houses are slightly advanced, while those at the ends have projecting bay windows facing the road. On the garden side, by reversing the plan of each alternate house, the adjoining drawing-rooms are brought together, and a broad garden space is formed between the kitchen wings. The houses are faced with reddish-brown bricks, and have wood cornices and door-hoods, the roofs being covered with green slates. A general view showing the backs of the houses, together with a plan, is reproduced on the preceding page.

*Plaster Ceiling, "Littlecroft," Whetstone.*

This ceiling, from the drawing-room of a house designed by Mr. Arthur Keen, F.R.I.B.A., is a delicate example of modern plasterwork, modelled by Mr. Laurence Turner.

*Plaster Ceilings in Dublin.*

These ceilings, from the Belvedere House and St. Stephen's Club respectively, date from the latter part of the first half of the eighteenth century. The use of ornate plaster decoration, much of it evidently modelled *in situ*, was almost universal in these Dublin houses, even the smaller kind being embellished with rich cornices. There must have been a large number of skilled craftsmen at work in Dublin (foreigners, most likely), not only in the early part of the century, but later, when the influence of the Adam school had made itself felt. The two illustrations given are interesting as showing the somewhat florid type of work that was in vogue at the time.

*St. George's Hall, Liverpool.*

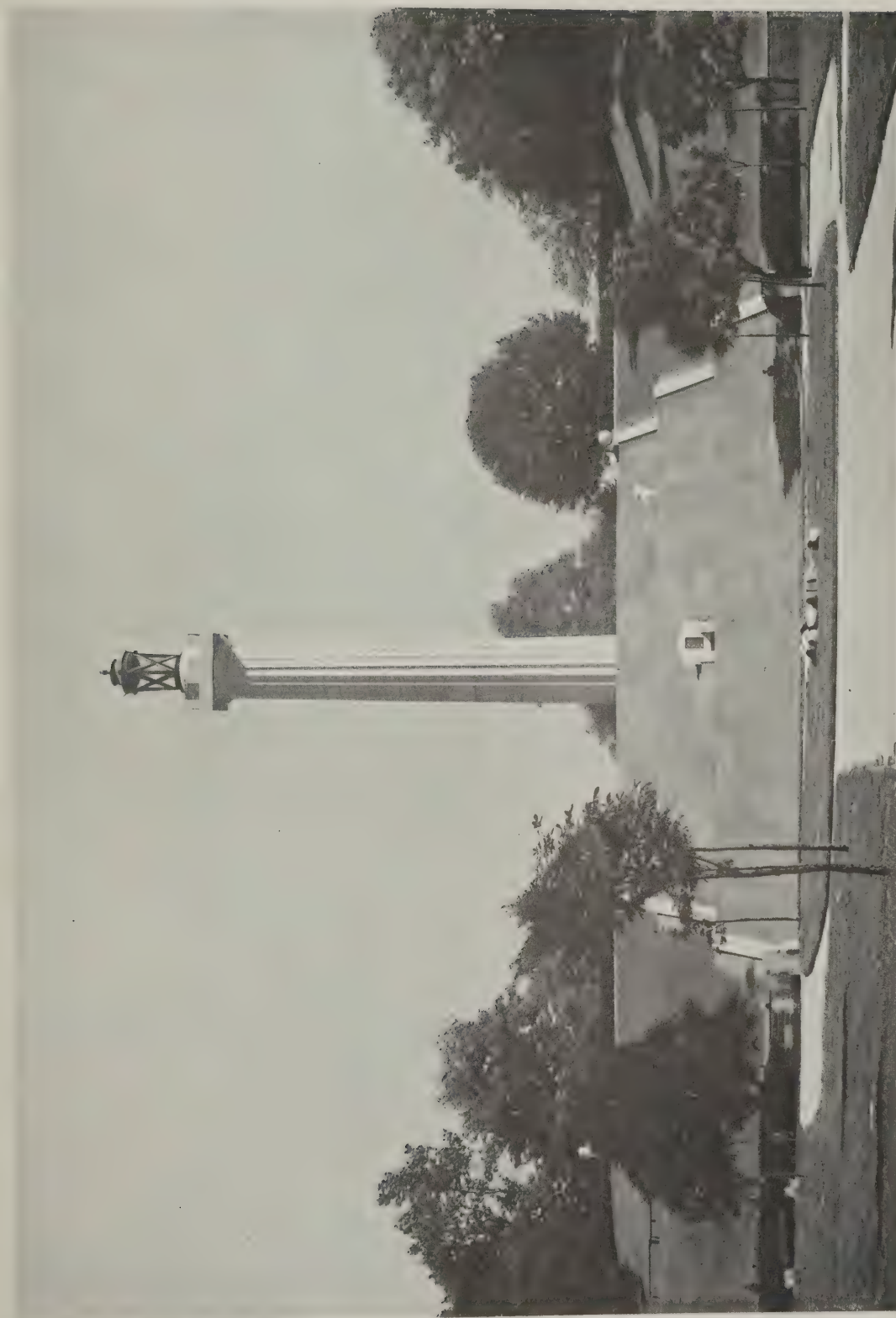
A recent Order by the Board of Education has recalled some interesting memories of Harvey Lonsdale Elmes. The connection between the two will be fully understood by a perusal of the following facts. It is not generally known that in the year 1856 Liverpool's feeling of admiration for Elmes's great work and the sentiment aroused by his early death, and the fact that he had not lived to see the completion of his great hall, led to the raising of a fund of £1,400, the income of which was to be devoted to the assistance of his widow during her life and then of his child, and afterwards to the founding of scholarships for architecture and the fine arts. Mrs. Elmes died many years ago, and not long since the trustees received intimation of the death of Mr. Elmes, jun. It therefore fell to them to consider the duty of administering the scholarships. A difficulty arose owing to the fact that in the interval since 1856 each one of the educational bodies mentioned in the deed has more or less changed its form. The Liverpool Royal Institution closed its school over twenty years ago, the Liverpool Mechanics' Institution has become the Liverpool Institute, and is now in close connection with the Corporation Education Authority, and the Liverpool Collegiate Institution has been divided into two organisations, one of which, known as the Liverpool College, has been moved to Lodge Lane, and the other, known as the Liverpool Collegiate School, remains in Shaw Street, and is also connected with the Corporation authority. After consultation with the Board of Education, a scheme has been drawn up by which the income of the investment is to be applied to scholarships, tenable at the School of Architecture of the Liverpool University, or some institution of higher education approved by the trustees, and open to pupils, boys and girls, who have attended for not less than six terms at the Liverpool College, Liverpool Institute, Liverpool Collegiate School, or the Liverpool City School of Art. The scholarships are to be awarded under the

direction of the Council of the University. In view of the foregoing facts it is appropriate to give a short account of the history of St. George's Hall, together with a few particulars concerning Elmes himself. A fine view of the hall, with a plan, is reproduced on the double-page plate in this issue. About the time of the accession of Queen Victoria a committee was formed in Liverpool with the object of building a grand concert hall for the performance of sacred music. Competitive plans were invited, and, at a date near the Coronation of the Queen, a foundation-stone was laid in the open space between the present St. George's Hall and the Walker Art Gallery, probably near the Wellington Monument. It was laid with some formality and before working plans were obtained, and in point of fact no building was ever erected upon the foundation. Eighty-five or eighty-six sets of plans were submitted, the successful competitor being Harvey Lonsdale Elmes, a young Londoner who had never been heard of by anyone in Liverpool, and who had never to that time erected a single building. He had, however, an inherited aptitude, being the son of an architect who was perhaps better known for what he wrote than for what he built. For reasons probably financial the committee's intentions hung fire, and progress was arrested. It was shortly after this date that the civic authorities put forward a proposal for the erection of assize courts—an entirely independent project. Plans were invited, and again the award was given to Elmes. After some further delay it was decided to erect one great building, to include both assize courts and concert hall. At this time Elmes was under thirty years of age, had never been to Greece, nor even crossed the Channel. His achievement proved, therefore, the strength of his scholarship and imagination. Though a Londoner, he built nothing in London, and all his work was done in Liverpool to which city he was a stranger. It was done, too, within a few years, for his career, so immensely promising, was cut short before his thirty-fifth birthday. In the early stages of the building work Elmes directed operations from London, but before long he found it necessary to take up his residence in Liverpool. His devotion to the task proved such a trial to his physical strength that his health completely broke down, and after a visit to Jamaica and the West Indies in the hope of recovering he died in 1847. [Some of the foregoing facts are quoted from an interesting article in the "Liverpool Daily Post and Mercury."]

## THE QUESTION OF PAPER ECONOMY

AS everyone knows, paper supplies have been reduced by one-half, in accordance with the scheme for effecting drastic economies in our imports. This has imposed the necessity on news-papers and journals to do their utmost to eliminate all elements of waste, in furtherance of which aim some newspapers have abolished the system of "sale and return." We ourselves do not find it necessary to do this at the present time, but we would ask our reader to aid us in economising paper. They can do this in either of two ways—(1) by placing a direct subscription for this Journal, or (2) by making a point of getting their copies regularly from the same news-agent. It is obvious that if a reader buys his Journal here this week and there the next, newsagents cannot determine the exact number of copies they may want in any single week, and the result is bound to be waste in "returns" (*i.e.*, copies returned unsold). This wastage, in the national interest, to be reduced to the smallest possible amount, and we therefore ask every reader to make a point of adopting one of the two methods mentioned above.



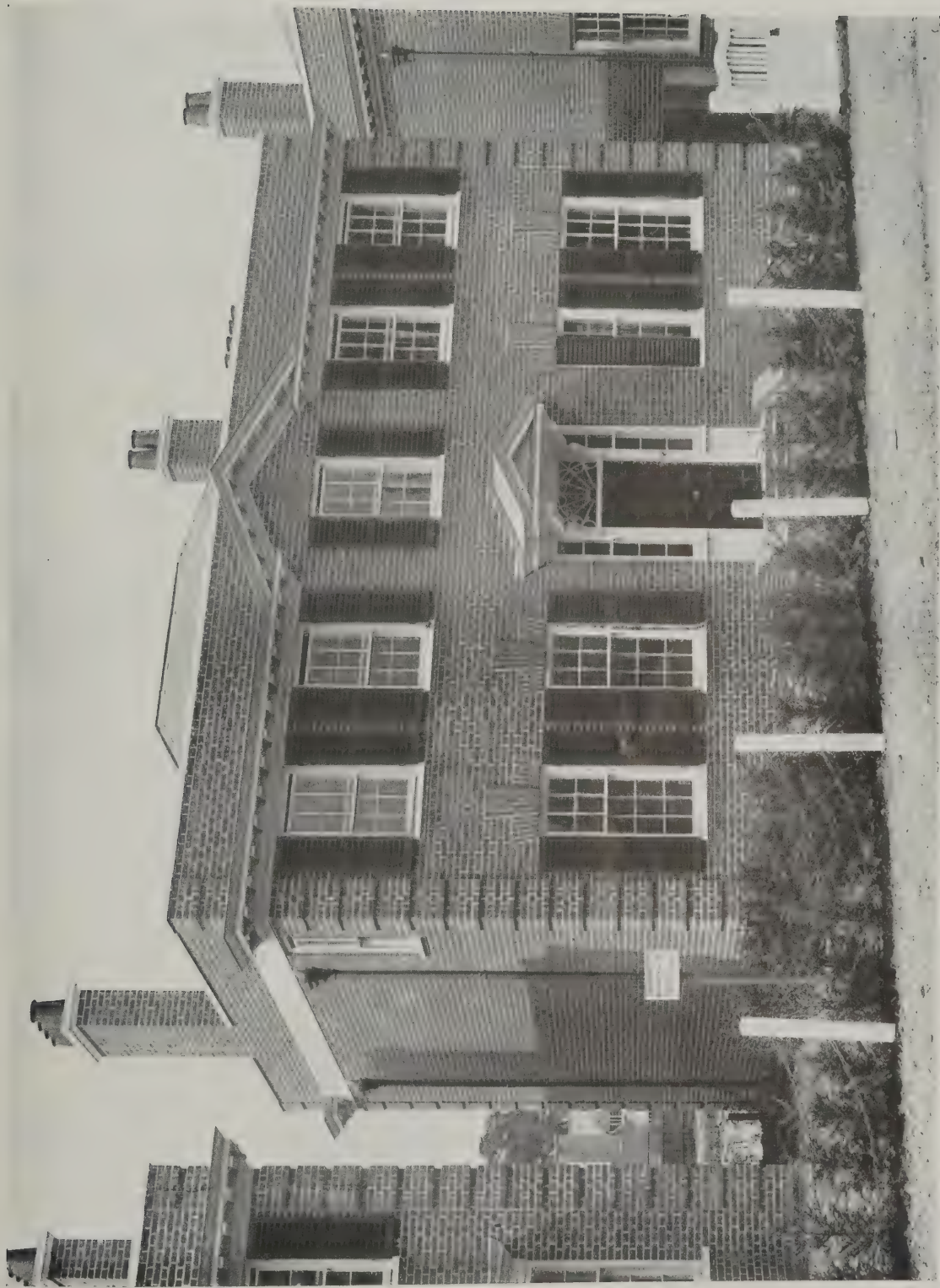


COMMEMORATIVE COLUMNS AND OBELISKS. VII.—PRISON SHIP MARTYRS' MONUMENT, BROOKLYN, NEW YORK.

McKIM, MEAD, AND WHITE. ARCHITECTS.







MODERN DOMESTIC ARCHITECTURE (SERIES III.) III.—HOUSE IN HEATH DRIVE, GIDEA PARK, ROMFORD, ESSEX.

RONALD P. JONES, ARCHITECT.







DETAILS OF CRAFTSMANSHIP (SERIES II.). XXV.—CORNER OF PLASTER CEILING AT "LITTLECROFT," WHETSTONE.  
BY LAURENCE TURNER.







Ceiling, Belvedere House.

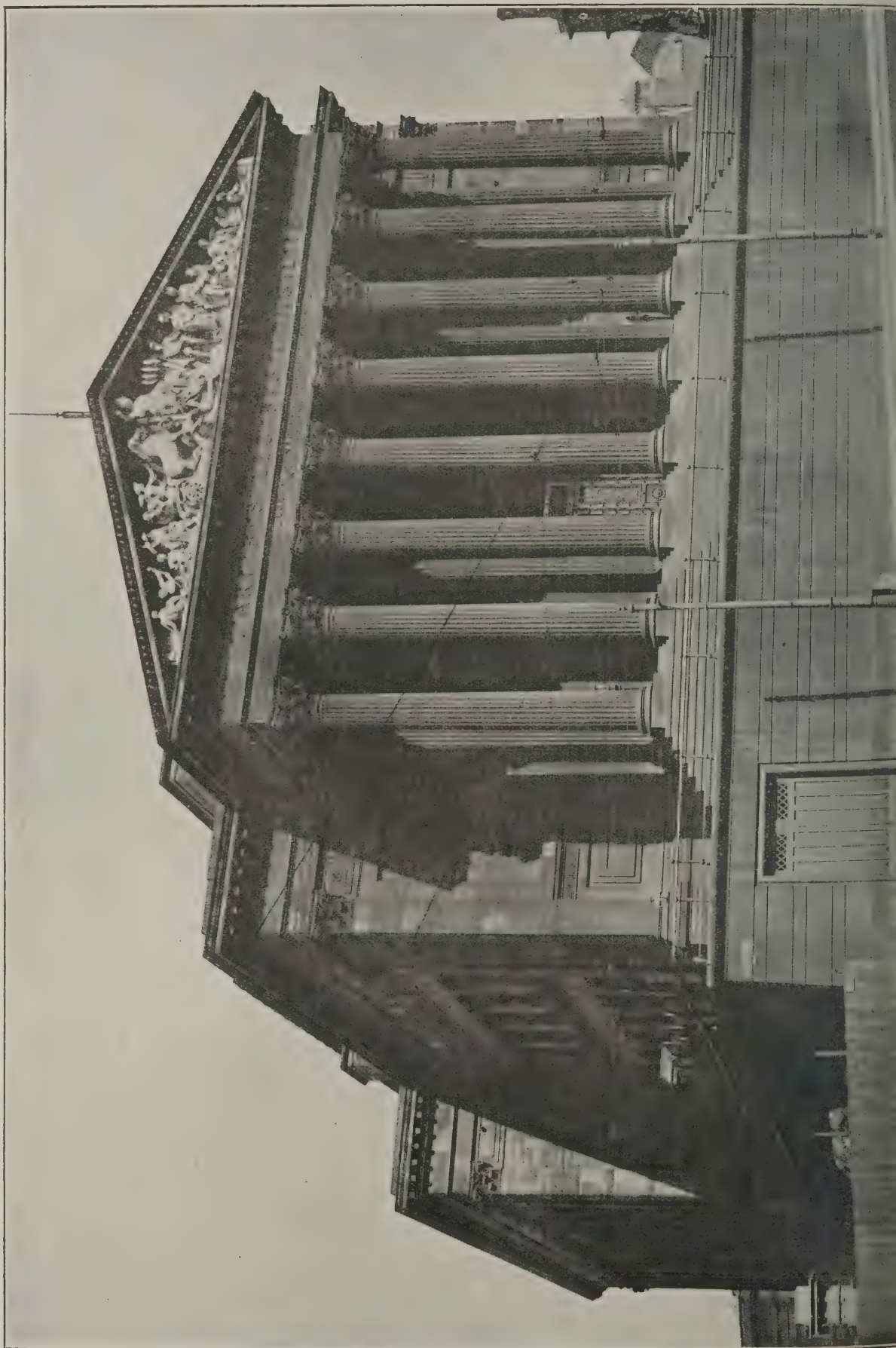


St. Stephen's Club, Detail of Ceiling.





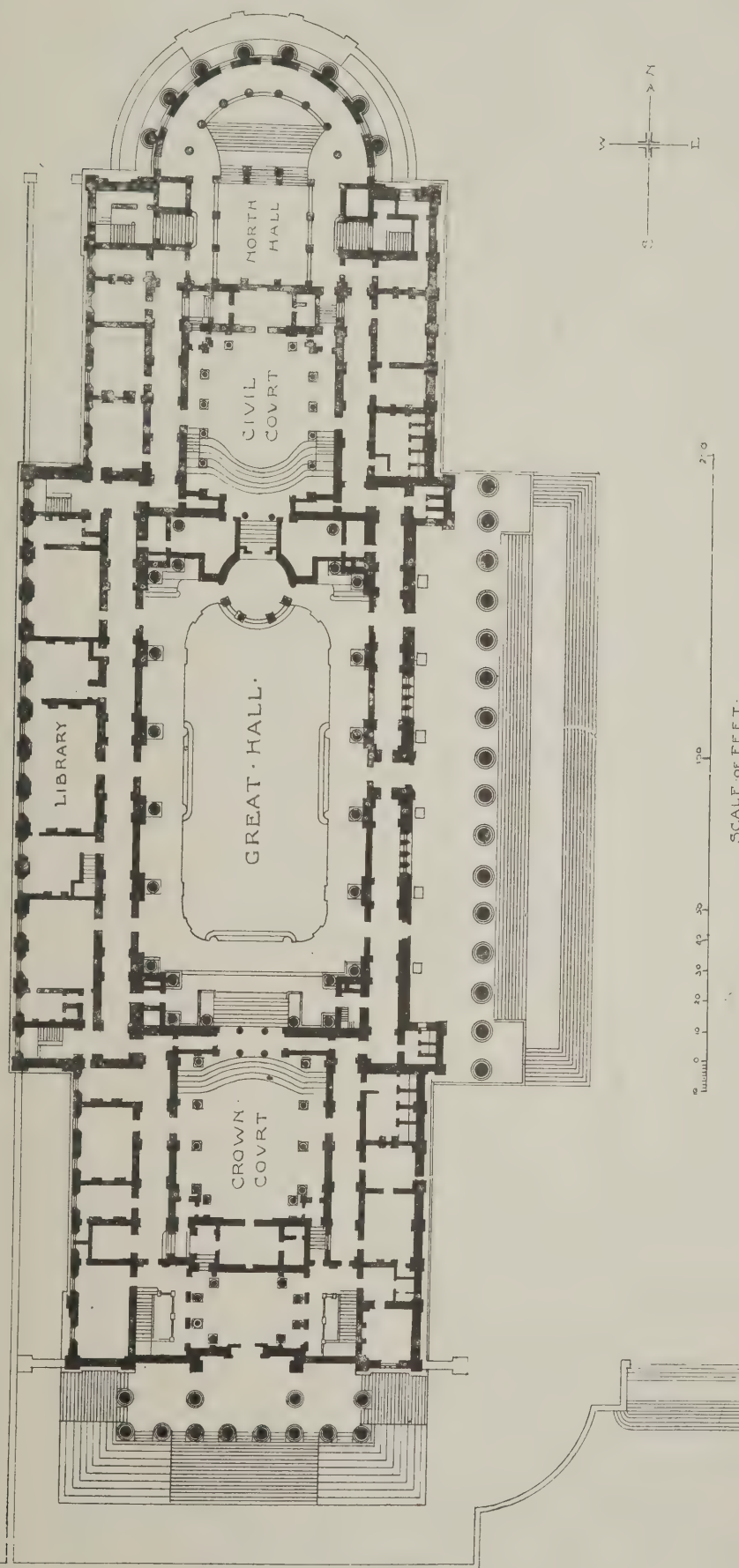
12





ST. GEORGE'S HALL · LIVERPOOL ·

GROUND · PLAN ·



MONUMENTAL ARCHITECTURE (SERIES II.). XII.—ST. GEORGE'S HALL, LIVERPOOL: SOUTH PORTICO.  
HARVEY LONSDALE ELMES, ARCHITECT.





## TWO MILLIONS AND A HALF FOR BIRMINGHAM IMPROVEMENTS.

Many great schemes, involving in the aggregate a huge expenditure of money, have been scheduled by the various committees of the Birmingham Corporation as being required to be undertaken after the War. The General Purposes Committee, in a report presented for consideration by the City Council, state that in March last year they instructed the various committees to prepare and submit the various projects they had in view that would entail labour, and also to arrange and tabulate such projects in the order of their importance and report their recommendations as to those which should be immediately engaged upon at the close of the year. While the information was in course of preparation the Local Government Board forwarded a series of queries bearing upon the same matter, and the particulars were supplemented in many respects to meet the Board's requirements. This led to many months of delay, as it was impracticable for the Corporation departments, with their depleted staffs, to deal with the questions promptly. The particulars have been supplied and tabulated in the form required by the Local Government Board.

The table of suggested works is of considerable length. It shows the degree of urgency for the works, the approximate amount of expenditure involved, the approximate period over which the works would extend under ordinary conditions, and the number of men of all classes who would be employed. No estimates are given of the cost of the schemes projected by the Watch and Asylums Committees, but the cost of the schemes scheduled by the other departments is £2,477,917, distributed as follows:

Committee.	Estimated Expenditure.
Water .....	£729,030
Gas .....	616,000
Education .....	316,202
Trams .....	198,714
Baths .....	195,000
Public Works .....	186,721
Refuse Disposal .....	111,000
Health and Housing ....	57,500
Estates .....	46,950
Parks .....	20,000
Free Libraries .....	800
Total .....	£2,477,917

The Parks Committee purpose a general laying out at an early date of recreation grounds where at present no work whatever has been done since acquisition. The expenditure is estimated at £20,000, and the work will occupy 150 men for two years.

The Education Committee propose the erection of new Council schools in Nansen Road, Saltley; Oxhill Road; Willow Avenue, Rotton Park; York Road, Hall Green; Bath Row; Garrison Lane; and Peel Street. The estimated cost ranges from £6,000 in respect of the Bath Row School to £15,000 at Nansen Road, Oxhill Road, and York Road. A new clinic in Harborne Lane is suggested, and also the improvement and enlargement of a considerable number of other schools and centres. In regard to secondary education, among other proposals is a new school to meet the requirements of Erdington, Ward End, and Saltley, at a cost (including land) of £24,000, and a new school at King's Heath, the expenditure on which is estimated at £30,000. Several new special schools are suggested, and the extension of the Technical School is esti-

mated to cost £80,140, with an additional £12,360 for furniture and fittings. These works will occupy a large number of men for periods ranging up to two years, but the authority of the Board of Education to carry out the schemes has not yet been obtained.

The Baths Committee suggest a new bathing establishment in George Arthur Road, at a cost of £20,000, a new central establishment in Kent Street, to cost £60,000, new establishments at Harborne, King's Heath, Greet, and Erdington, the cost of each being estimated at £20,000, the reconstruction of Woodcock Street establishment at £30,000, and new cottage baths at Willis Street and Quinton, costing £3,000 and £2,000 respectively. These works will be carried out by contract.

The Estates Committee recommend, among other things, re-roofing of the Town Hall, and inside and outside painting of the building, at a cost of £10,000, and laying out of additional land at Yardley Cemetery, with the necessary church and buildings, at an estimated expense of £13,000, and a similar laying out of Quinton Cemetery at a cost of £16,000. These works would find employment for a good many men for periods up to eighteen months.

## THE MEMORIAL WINDOW—A PLAINT.

Writing under this title in the "American Architect," Mr. Charles Collens declares that the relation between architecture and stained glass, viewed from the standpoint of the architect, might more fittingly be styled "The Memorial Stained Glass Window and the Atrocities which It Can Commit." And yet, he admits, it is hardly fair to limit the blame for this entirely to the stained glass men. Heaven knows that after we had graduated from the charming influence of the Early Colonial, ecclesiastical architecture in America has many crimes to account for, including a deplorable lack of knowledge of the first principles of stained glass.

### *The Dark Ages of the Nineteenth Century.*

What the state of mind of our predecessors must have been which enabled them to worship in the churches which the architects and builders of the Dark Ages of the nineteenth century produced, is something which only a psychologist could explain. I can remember as a boy sitting in a church in Cleveland where the pulpit came high up against a blank wall, on which, in order to enhance the beauty and depth of the "edifice," as it was called, the "Art" Committee had caused to be painted a deep channel with columns in perspective running hundreds of yards back into space, with wonderful stained glass windows casting purple shadows in all directions. This is typical of the conditions which existed during the horsehair reign of the Early Pullman and Late Wagnerian dynasties.

After these well-meant but unsuccessful attempts at art, we were next confronted with the terrible scourge of the practical church builders who developed fearsome plans by which all one side of a church could be made to disappear and throw Sunday school and everything else into one room with circular seats, sloping floors, and all the accessories that go to make up a first-class moving-picture theatre. The man who invented the Akron plan for churches may have a niche prepared for him in heaven somewhere, but he certainly

failed to advance the cause of ecclesiastical architecture, except by a process of elimination. We also had to pass through a bad case of Romanesque, introduced by Mr. Richardson, who was a great man in his time, but whose imitators failed to equal him in genius. Twenty years ago Trinity Church was voted the finest church in America, but I doubt if to-day it would even be placed among the foremost. This fact is due to the work of a group of younger men, led by a few of their elders, such as Mr. Upjohn, Mr. Renwick, and Mr. Vaughan, who have become so well trained in the highest expressions of ecclesiastical art as to give great promise of wonderful results and the hope that our churches will ultimately become our highest architectural achievements. This result has been further aided by the increased knowledge and education of the public, which is now demanding something more ecclesiastical, more ritualistic, and more beautiful than we have been accustomed to.

### *The Awful Problem of the Memorial.*

What I have said about architecture is true also of the art of stained glass in the States—if it can be called an art—until within a few years. And herewith begins the terrible tale of the memorial stained glass window, for while "churches may come and churches may go, the memorial stained glass window goes on for ever." Our firm has had the good or bad fortune to reconstruct a number of churches, and in practically every case has been confronted with the awful problem of these memorials. Whatever improvements are made, structural or otherwise, are always done with the understanding that the windows must remain. It has sometimes seemed almost necessary to organise an "Order of Stained Glass Gun-Men" bound by the most terrible oaths secretly to do away with the stained glass horrors which have obstructed our attempts at improvement. There is one church here in Boston with a great transept window, the eyesore of every worshipper, but which cannot be eliminated because of the deed of acceptance, and because the donor took the added precaution to provide extra pieces of all the various colours entering into the window, so that if any piece ever became broken a new piece could be installed. Another Boston example, Dr. Edward Everett Hale's old church, while belonging to an isolated type of architecture, would not be so very bad if it weren't for the unfortunate mixture of glass which it contains. Hardly any two windows are alike, either in tone or scale, and the whole interior is dominated by a tremendous opalescent angel flying through space which would detract my attention from any peaceful communing. I could name any number of similar examples. In fact, there is scarcely one of the older churches extant which has not this insidious growth somewhere in its anatomy.

### *Good and Bad Stained Glass.*

Do not think that I am decrying the memorial window as such. Like fire, it is a good servant but a bad master. Nothing can be more beautiful or a greater aid to the architecture of a church than a fine window. Anyone who has travelled abroad and seen the wonderful colours and compositions in the French cathedrals, or the clearer, more silvery tones of the English work, cannot fail to be tremendously impressed with all that stained glass can mean if handled by real artists. Just as architecture passed through the awkward age in this country, so did stained glass.



First we went through times when the windows were made in great blocks of crude colours looking more like oil cloth than anything else—when the drawing was atrocious and the compositions poor. Again came periods ruled over by men who were artists in their way, but who failed to grasp the true meaning of stained glass, which is never to try to paint a picture. Their windows still have a certain appeal for the untrained client, but they are not ecclesiastical and fortunately are passing out of vogue. An opalescent stained glass picture is far more out of keeping in a church than some of the earlier and cruder attempts.

Then, again, there are those who have spoiled good Colonial churches by introducing stained glass into the window openings. There is a fine stone Colonial church near Boston Common which, to my mind, has been entirely ruined by a series of opalescent stained glass picture windows. The "artist" even removed all of the muntins, which are the first elements of Colonial fenestration, so that the effect is entirely foreign to the architecture in every sense of the word. How much more dignified are the clear glass openings of the Park Street Church or St. Paul's. To put stained glass in either of these churches would be like putting a loud coloured headdress on a prim and prudish Quakeress.

#### *Gun-Men Wanted.*

Almost all of the sins above enumerated were due to two causes. First and foremost was the lack of skill and knowledge on the part of the stained glass men of the past, and, secondly, the lack of foresight on the part of almost all of our church trustees or vestries. Time and again in building a church we have urged in the strongest terms on the committee the absolute necessity of passing some kind of a resolution or framing some code of action which would bind the church to its future policy with regard to the glass. Usually, like a man making a will, they put it off until too late, and then get caught, or else they get caught and haven't the backbone to refuse an inappropriate memorial. A short time ago we completed a small Colonial church. After we got through an influential member of the church presented it with an opalescent chancel window. We protested all we could, but the vestry hadn't the courage to refuse, and so the church to-day stands spoiled, in our opinion. We recently remodelled a fine old Gothic church in Connecticut, where a series of very beautiful windows are gradually being installed. Several years ago someone presented an opalescent memorial horror to the church which confronts us halfway down the aisle. We don't know what to do with it, as the donor had it installed where she could sit and see it every Sunday. This is one of the cases where we are anxiously awaiting the formation of the above-mentioned "Order of Stained Glass Gun-Men." Some time ago we were asked to rebuild the chancel of a church in central New York State. All was clear sailing except for an oil-cloth stained glass window of "St. John," which the congregation had looked at so long that they had become partially hypnotised by it, and the only thing to do was to promise that "St. John" with his "beautiful" face should still gaze up into space while jotting down with a quill pen on a long parchment roll his impressions of heaven. But we took "St. John" away and broke his great expanse of red garment into many small bits, and placed him on a new background of grisaille and

put a little masculinity into his face, and he is now fairly presentable.

#### *Windows that Obstruct Light.*

Another thing that the stained glass men of the past didn't take into consideration was the adequate lighting of the church. An important church in New York which we attempted to better had its windows so choked with (we won't mention names) windows of so dark and muddy a tone as to make it necessary to light the lights even on a sunny day in order to find our way about. We had to take away the organ and open up the west window to brighten the church, because of these stained glass memorials which couldn't be moved. I could name any number of churches that are afflicted in this same way.

Nowadays, however, our stained glass men study the church with careful thought for light values and so grade their backgrounds and grisaille as to attain a nice equilibrium between the north and south lights, the proper softening of the chancel windows, and the greater lighting opportunity of the west window.

If these church committees would only start out with a policy, as I have said before, how much better off we should be! If possible, they should always map out beforehand a fixed scheme for the church, assigning a subject to every window. Then they should determine on their stained glass maker either by looking around at the very best work which is now being done, or by paying for a small sample light to be made by three or four of the best men of to-day, thus making a selection. They should either allot the entire work in the church to one man or certain parts to different men. Personally, I can see no harm in letting one man do the chancel window, another the west window, another the aisle windows, and still another any chapel or baptistery windows—provided, of course, that all of the glass is of the same period, and that a general scheme is carried out. But first let the church appoint an art committee made up of people who know and not who have given freely, and let the architect be a permanent member of this committee, and perhaps the succeeding generations who worship in that church will bless those who had the good sense to make such wise provision.

#### *Temporary Glazing.*

There is another matter which should be carefully studied, and that is the temporary glazing. This should be so softened by stippling as to exclude the direct sun rays, and have just enough colour to recall the stronger glass of the permanent windows, and bind them together if separated.

Many churches are doing away entirely with the memorial windows and installing grisaille of a fine quality to act as the permanent glass. This can be seen at its best in St. Thomas's Church, the Chapel of the Intercession, or the new Synod Hall in New York.

I am afraid that I have been knocking the stained glass men pretty hard. A few years ago we didn't have any stained glass artists in the country [U.S. of America], and any glass worth looking at came from abroad. Now we are at last fortunate in having a few younger men who have served their apprenticeship abroad and who know what real stained glass is. Some of them understand how to make grisaille with its geometrical pattern, its bits of sparkling glass, and its mosaic effect. Others understand how to produce the rich deep colouring such as we see at

Chartres, or the more delicate silvery glass of the English fifteenth century period. And with this has come also the master in the use of the lead lines, and in drawing those charming mediæval faces and hands which are so truly filled with ecclesiastical feeling. But, above all, they know how to make a window an object of real decorative value and not an opalescent picture. Such men are now ready to co-operate with the architect in producing a combination in which the stained glass is proud of the architecture and the architecture is proud of the stained glass.

## NEWS ITEMS.

#### *Statue to Richard Trevethick.*

Lord Rhondda is giving a statue to Richard Trevethick, the inventor of the locomotive, to Merthyr, where the first trial took place in 1804.

#### *The Rebuilding of Dublin.*

The Dublin members of Parliament are in communication with the Ministry of Munitions and the Chief Secretary, pressing upon them that they should keep the undertaking in reference to obtaining the necessary for the rebuilding of Dublin.

#### *Retaining Fee for Surveyor Serving with the Forces.*

At a meeting of the Mutford and Lottingland Rural District Council a recommendation by the Roads Committee was received that, the surveyor having obtained a commission in His Majesty's Forces, be granted a retaining fee at the rate of £40 per annum during his absence on military service, and that the appointment be kept open for him. The report was adopted, but it was decided that the arrangement as to payment should be reconsidered at the close of the financial year.

#### *Extraordinary Accident to a Master Builder.*

At Sheffield an inquest was held on the body of George Thomas Torry (fifty-six) of Pickering Road. Mr. Torry, who was a master builder, was engaged on work at a manufactory in Don Road. In order to carry out repairs to roof windows, he mounted a ladder near to some overhead shafting. A scarf which hung loose round his neck was caught in the revolving shafting. Realising his danger, Torry threw himself from the ladder to the ground. He was badly injured, and was conveyed to the Royal Infirmary, where he died within a short time. A verdict of "Accidental death" was returned.

#### *The Condition of St. Paul's.*

Canon Alexander, preaching at St. Michael's, Cornhill, on behalf of the Preservation Fund of St. Paul's Cathedral, said that the condition of the fabric has been the cause of very considerable anxiety to the cathedral authorities, and not least so during the last few weeks. The main trouble lay in the great pier and in parts adjacent to them, in which serious internal fractures had been discovered recently. Experts could not tell either when the slow and delicate work of repair would be completed, or what further difficulties would be encountered. Though it was possible to obtain in Berlin an artistic photograph of St. Paul's in ruin, he had every reason to hope that for many centuries to come the golden cross would continue to send its great appeal over London.





## WAR BUILDINGS SECTION

### FIRE PROTECTION FOR WAR BUILDINGS

[SPECIALLY CONTRIBUTED BY HAROLD G. HOLT, A.R.I.B.A.]

*Risks from fire-hazards are greatly multiplied in buildings which are used for war-work, or for housing soldiers or munition workers; in the former case by the dangerous nature of the work, in the latter by the carelessness of congregations, which seem to reduce the sense of individual responsibility. The principles enunciated and the practice recommended in the following article apply, therefore, with manifold force to present conditions, and should be invaluable to those who are entrusted with the fire-protection of war buildings.*

AMONG the many duties of a specialist nature which are devolving upon the architect, the equipment of the modern building in a manner best calculated to render it fully protected against fire damage is of constantly increasing importance, and it is desirable from every point of view that the architect should retain control of such work. To that end it is certainly necessary that he should give much closer attention to the subject, and the aim of this article is to provide a brief introduction thereto.

#### Importance of Planning.

It does not appear to be sufficiently recognised by architects that, at the outset, the general arrangement of plan and section of a building very materially affects the possibility of its adequate protection from fire, and, by implication, its insurance rating. Even with a poorly planned building, much may be done by careful selection of materials and arrangement of fire-stops; but, with less expense, more beneficial results can be achieved by means of careful planning.

#### Fire Hazards and Exposure.

A clear understanding of fire hazards and a little study of the first principles involved, will save a good deal of time and confusion. As a building may be endangered by fire either from within or without, the whole aim of fire-protection planning and construction is to combat these internal and external hazards.

A building may be endangered from the outside either (1) from a single building or block of buildings on fire in the immediate neighbourhood, or, (2) by general conflagration in the whole area of a town

or city in which the building is situated, (3) by other external means such as by sparks from a locomotive, forest fire, lightning, etc. The degree of danger to which a building may be subjected is termed its "exposure"; thus, a building would be said to be badly exposed on such and such a side where it is in close proximity to a timber yard, oil manufactory, etc. Conflagration hazard depends upon the type of construction of neighbouring buildings generally, and the character of their contents and occupancy. Certain areas in various large cities of the world are recognised by all insurance companies as being specially dangerous, and the insurance premium on a building in such districts is much higher than for an exactly similar building more favourably placed. In assessing the risk, insurance experts take into account also the character of local fire service, good or bad equipment, street mains, water supply and pressure available, climatic conditions, width of streets.

#### Internal Risks.

Internal risk or hazard depends very greatly, of course, on the class of building, and expert rating will take into account the nature of occupancy, amount of inflammable contents, likelihood of sudden outburst, or dangerous smouldering fire, and the character of design, construction, and materials.

Tall buildings create a difficulty for the public fire service. Generally, it is found almost impossible to get an effective jet at a height of more than 70 ft., though special apparatus may considerably increase the reach. Except hydrant

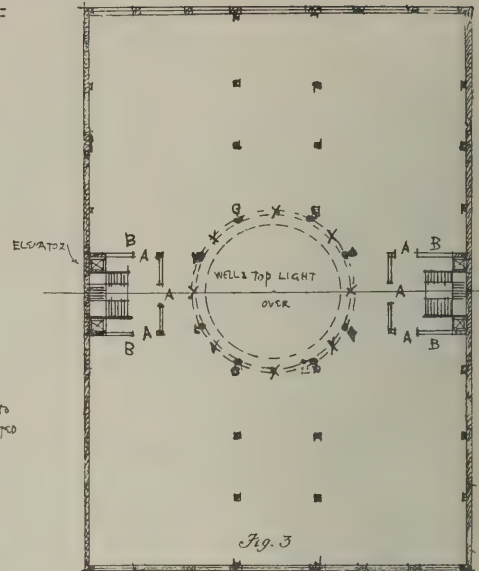
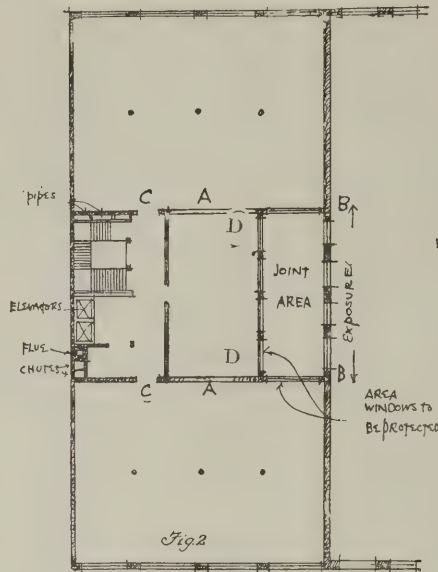
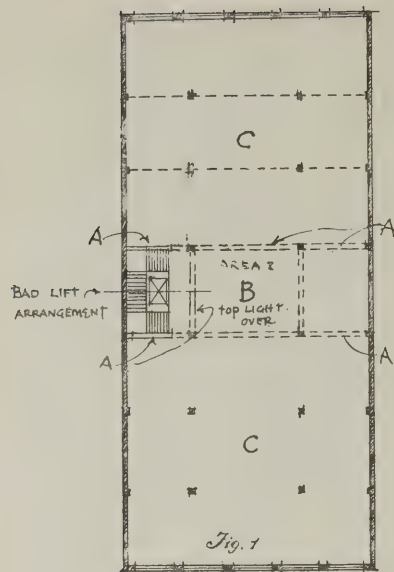
services installed inside buildings, all other extinctive apparatus may be considered as purely first-aid appliances, and hence the importance of protective construction becomes clearly evident. Buildings should be planned with a clear view to shutting off any portion in which fire may have broken out, and with due consideration of the effects of planning in helping or hindering efforts at extinction.

#### External Fire Stops.

In protecting from external hazard, it is desirable that on the side of a building badly exposed to fire risk a fire stop should be provided in the form of a solidly built blank wall, or at least a wall having few openings through which fire from adjoining buildings could break. Exterior walls built of well-bonded brickwork, of suitable thickness, according to height, form an excellent fire-stop. Party walls should also be treated as a possible fire-stop against an adjoining hazard, and should also be of solid thickness throughout. Recesses should be few and far between. Party walls should be taken up higher than adjoining roofs, and in many cases local by-laws make this compulsory.

In London, buildings of the warehouse class more than 30 ft. high must have their party walls carried to a height of 3 ft. above the roof-flat or gutter of the highest adjoining building, and elsewhere similarly, 15 in. high. To afford additional protection to the roof, and also to provide means of escape, parapet walls should be built in preference to overhanging eaves. On flat roofs, the height of the parapet should not be less than 3 ft. 6 in. It is essential that the roof should be constructed of fire-





resisting materials, on which sparks, burning embers, etc., would simply char and burn out without doing serious damage.

Openings in walls of roofs are, of course, undesirable, but often it is necessary to provide them on a side which may be badly exposed, in which case they must be fully protected either by means of fire-resisting glazing in suitable metal frames, by fire-resisting doors or shutters, or by external drenchers.

Openings in the roof, such as dormers, skylights, access doors, etc., must also be suitably protected, and their construction must be carefully considered. Deep reveals, to afford as small an angle of exposure as possible, are desirable. Lintels must be constructed to withstand fierce fire for a considerable time, and the erosive action of a high-pressure water-jet. Stone lintels are therefore very undesirable.

#### Internal Fire Stops.

To control any fire which may occur within a building it is necessary that any section of it be capable of being shut off from the remainder of the building, and that the construction of that section be such that it will withstand the effects of fire for a time sufficient to allow of the fire's burning out for want of material to feed it, or of its being extinguished with suitable apparatus. Several requirements are involved. First, each component part of the structure must be of a thoroughly fire-resisting nature; secondly, the greater the sub-division of the building into small compartments the greater the facility for isolation of an outbreak. In these conditions, there is a less amount of material at hand to feed the fire, while the reduced cubical capacity of the compartment coincides with relative reduction of air and draught.

#### Unit System of Construction.

This unit system of construction has been adopted with success in buildings such as cotton and wool stores, in which little or no inconvenience results from the sub-division.

#### Limitation of Cubical Contents.

Under the London Building Act (1894, Part IV.), buildings of the warehouse class were limited to a capacity of 250,000 cubic feet unless they were sub-divided by brick walls. In special circumstances this might be increased to 450,000 cubic feet, provided the buildings were less height than 60 ft. The height of buildings in London is, of

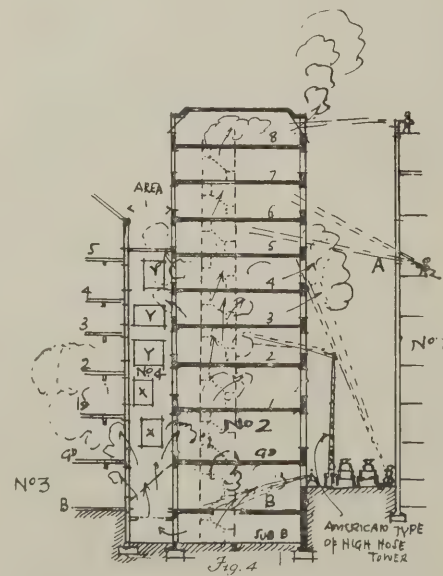
course, limited to 80 ft., exclusive of storeys in the roof, architectural features, etc.

The necessity for such regulations in a crowded city is evident, for however excellent the fire-resistant construction of buildings, the actual contents—fittings, furniture, and stored manufactured goods—may be highly inflammable, and therefore, to limit the possible spread of fire originated in such surroundings, it is necessary to sub-divide the building into compartments which can be more or less easily shut off, the fire being localised and controlled.

The regulations dealing with the limitation of cubical extent were found to be a hardship in regard to certain buildings where business required a large uninterrupted floor space and large cubical extent.

#### Opening Protection.

The largest floor openings will be at staircases, hoist and lift wells, etc., and their position demands careful consideration, since in a fire they become flues for smoke and fire. In large complicated buildings of the "miscellaneous tenancy," office, or hotel type, the number of such openings becomes a very serious matter. Passenger and service lifts, staircases, ventilating shafts, pipe ducts, dumb waiters, clothes, linen, and letter shoots, ash lifts and shoots, light wells and areas, are all possible points of danger.



#### Examples.

The consideration of a few types of building frequently met with as examples will perhaps make clearer some of the foregoing points.

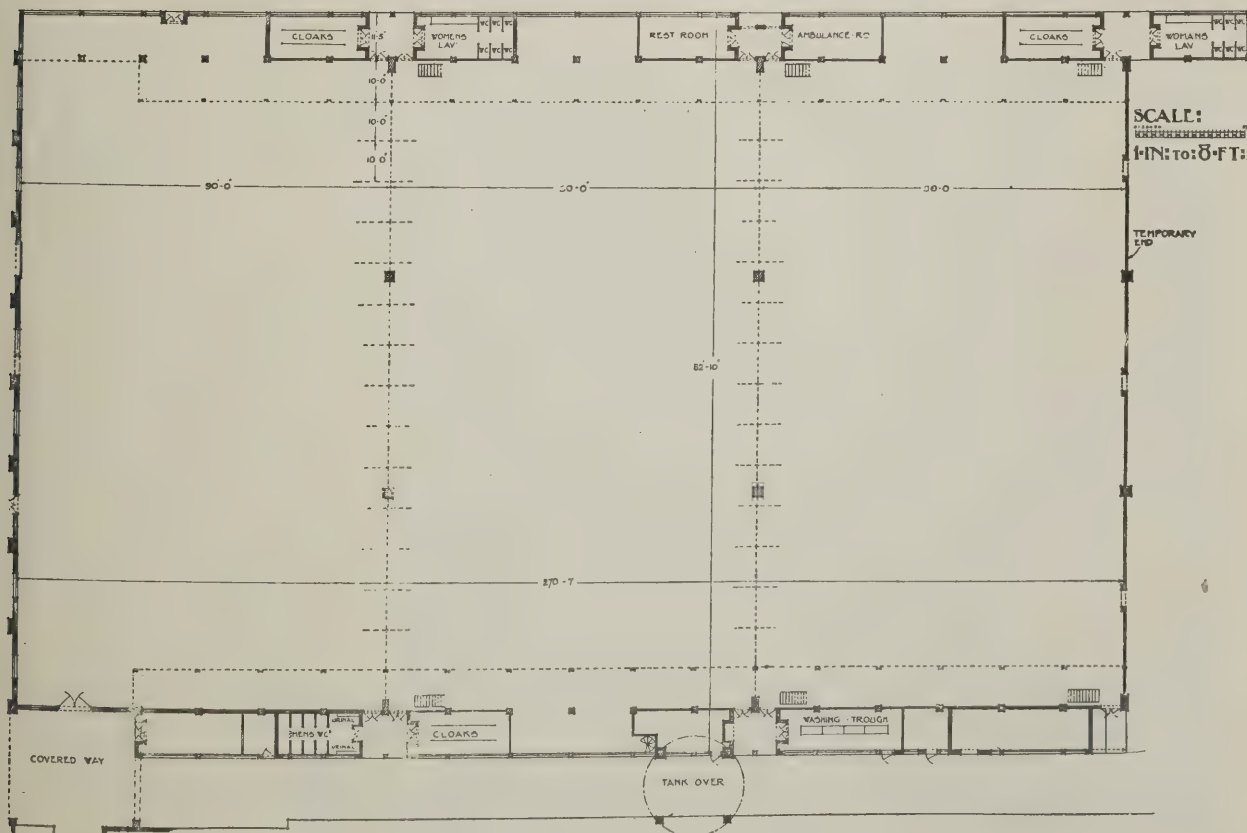
In Fig. 1 we have the outline plan of a building which is one of the hardest to deal with from a fire-fighting point of view, long, narrow, inaccessible save at the ends, and having the centre pierced by a light, well, or area, near which will be found a staircase, possibly a lift. In case of fire the centre well becomes a flue, spreading fire right and left through the floors of the building; an upward draught is caused, which considerably helps the horizontal spread of fire in the various floors. Fire partitions with efficient cut-offs at openings would be much to mitigate the possibility of fire spreading, as at A A.

Fig. 2 illustrates a similar case, but the centre area is here possibly exposed externally by openings in an inferior adjoining building, from B to B. In this case all openings facing the light well as D D should be fully protected. Fire doors at C C cutting off the staircase on each floor will guard against the worst possibilities, with fire-resisting walls A A.

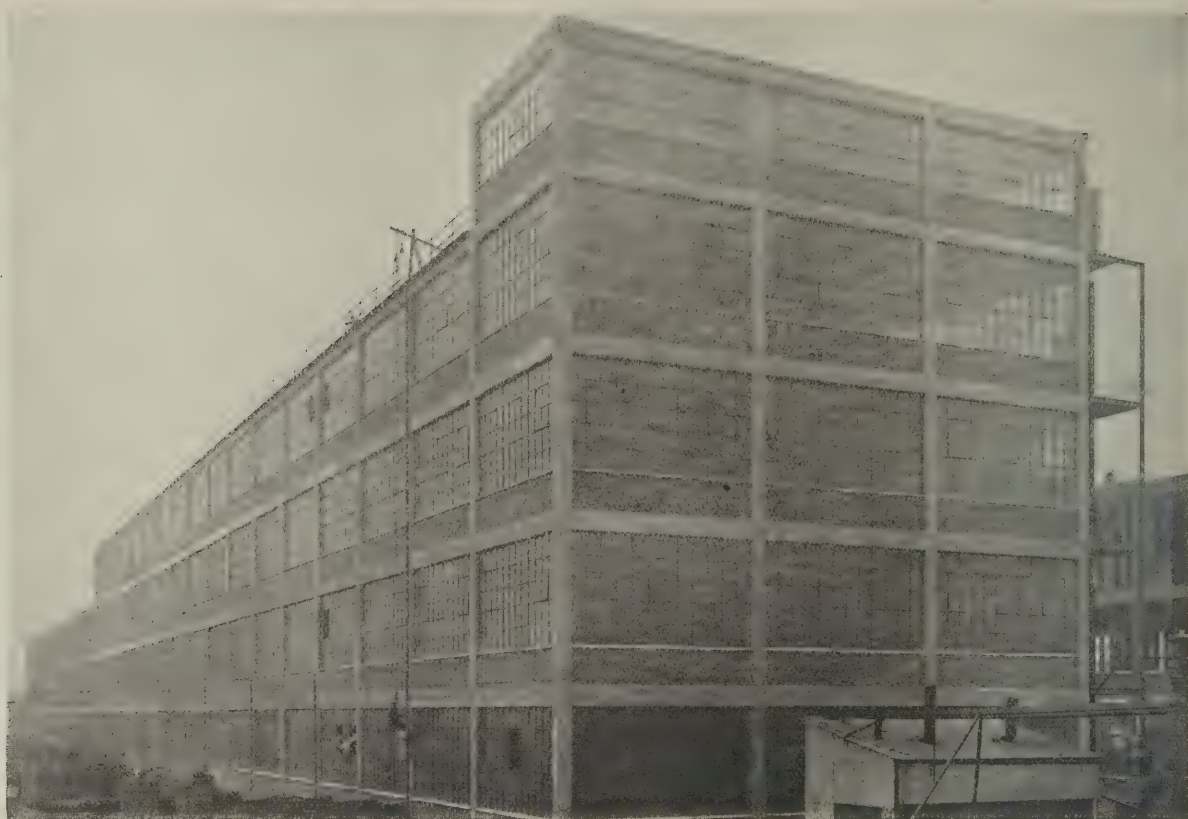
Fig. 3 is a rough sketch plan of a large drapery shop or department store with a large central area or rotunda, lighted from the top of the building, the various floors finished thereon as galleries. The spread of fire in such a building is usually very rapid, owing to the highly inflammable nature of the flimsy goods displayed for sale, added to which is the lack of sub-division or cut-off, so that the whole becomes practically one entire compartment of large cubical capacity. Passenger elevators should be placed in an enclosure of suitable fire-resisting glazing, or in a solid wall enclosure. Sub-division by fire walls, in which large openings, efficiently protected by steel shutters, as at X X, etc., may be placed, will afford much better opportunity for sub-dividing an incipient fire and preventing its spread throughout the building. The staircases should be enclosed by fire walls with doors of fire-resisting character opening on to them.

A recent actual example of fire in a building of the so-called "fireproof" type, the construction of which did not greatly vary from many buildings which were erected in this country previous to the war, is that of the New York Equitable Building. This was destroyed by fire





A WAR FACTORY. A. ALBAN H. SCOTT, ARCHITECT.  
(See page xiii.)



GUN FACTORY BUILDINGS IN REINFORCED CONCRETE: GENERAL VIEW OF EXTERIOR.

January 9, 1912; the value of the buildings alone was estimated at £700,000. In this building of large superficial extent, viz., 48,000 sq. ft., and consisting of basement, ground, and nine upper storeys, the promiscuous distribution of floor openings led to very rapid fire spread and disaster. There were no fewer than eight main and six subsidiary elevators, eleven dumb waiters, one main and various subsidiary staircases, one large and one small central court, and seven smaller light shafts, various smoke flues, pipe spaces, vent shafts, etc. It is stated in the report prepared for the New York Board of Fire Underwriters that the numerous light shafts not only assisted in spreading the fire from floor to floor, but also caused it to burn simultaneously on all the floors, producing an accumulation of heat sufficient to wreck the greater portion of the building adjacent to them. Large unbroken floor areas, lack of efficient cut-offs in the shape of fire partitions, and opening protection, and bad planning caused by the growth of the building and the varied nature of its occupancy, were directly responsible for the great financial loss and the loss of six lives during the course of the fire, although few persons were in the building at the time of the outbreak, about 5 a.m.

Fig. 4 shows section of a tall building (No. 2) with internal stair and lifts facing on a narrow street, also occupied by tall buildings (No. 1) and with light area to the rear and further building (No. 3) adjoining, and also to a building (No 4) across one end of the area.

The direction which flames and smoke would naturally assume in the event of a fire outbreak is indicated by the arrows. Assuming that the outbreak is in the basement an opening for light in the rear portion of ground floor gives immediate access for flame, etc., and the staircase furnishes additional means for conveying flame and smoke to the upper storeys.

Through the glazed wooden skylight over the rear portion of the ground floor access is given to adjoining building No. 3 if the *window openings are unprotected* or shutters for that purpose have been left open. Through the unprotected windows marked X and Y of building No. 4 the fire is carried on from both No. 1 and No. 3 buildings.

The value of powerful jets from large diameter (4-in. or 6-in.) mains in the building No. 1 across the street is indicated and it can easily be seen that the horizontal throw of the water is of great value, as it enables the firemen to reach the interior.

### GUN FACTORY BUILDINGS IN REINFORCED CONCRETE.

These buildings are constructed in three wings, each 600 ft. long by 60 ft. wide by 60 ft. high, and are connected at two points by towers, in which are carried the lifts, staircases, cloak-rooms, etc., leaving the entire main floors free for use. The total floor area is 48,000 sq. yd., the total cubical capacity 6,480,000 cubic feet, and the total area of window space 17,000 sq. yd. The Kahn system of reinforced concrete was used throughout.

The buildings are erected on a standardised system of construction, consisting actually of nine units. It will be seen from the accompanying illustrations that they are composed mainly of a light skeleton framework filled with steel sashes and glazing. Utility is the dominant note throughout. By means of a maximum area of window space the interior is everywhere flooded with natural light. The buildings, in fact, are a typical example of modern practice in factory construction. They are based on the "Daylight" model, which has been developed by the Trussed Concrete Steel Co., Ltd., with extraordinary success.

### THE MUNITIONS ORGANISATION

A careful examination of the report of the Auditor-General on the accounts of the Ministry of Munitions tends to show clearly that the average level of efficiency and economy has been considerably higher than might have been expected under the circumstances. The actual amount disbursed during the year ended March 31, 1916, the period covered by the report, totalled £224,300,000. This includes a period of about three months before the actual formation of the Ministry, when the War Office was still responsible for the output of munitions. In the subsequent nine months the new Department grew with enormous rapidity, the Headquarters Staff, which at the commencement numbered less than 200 in all, totalling 4,700 at the end of the financial year. In the meantime, also, an entirely novel system of dealing with contractors was evolved. The productive capacity of firms not previously employed was made effective by increased sub-division of work, where contractors undertook such portions of output as their machinery, etc., was suitable for; a system was organised for the purchase and supply of raw materials; housing schemes had to be undertaken; actual grants or advances of capital made to contractors for extensions of plant, the total of these alone reaching near £16,000,000.

It was inevitable that there should be certain instances where such advances should prove unsatisfactory. An ordinary trading or financial concern would under such circumstances reckon upon making a certain proportion of bad debts, but the system adopted seems to have been a very practical one. The question of whether the capital outlay was justified was a specified increase in the output. This was not realised, then an expert from the Ministry took charge of the work



One instance is mentioned where this second step proved unavailing. Further capital outlay, bringing the total up to £40,000, still left the output below the level fixed, and ultimately the works were purchased outright at a cost which the Treasury considered "decidedly unfavourable." If this was a solitary instance it speaks remarkably well for the general organisation, and it would appear, indeed, that it has been the willing co-operation of manufacturers in undertaking the work, and endeavouring to carry it through as efficiently as possible from patriotic motives, which has been one of the principal factors in the remarkable success of the Department.

The work has probably not in all cases been done as cheaply as it might have been, but, as every manufacturer knows, there is an added price which has to be paid for speed in the completion of a contract, and in this case speed meant everything. The result has been seen on the battlefields of France, and the system of decentralisation adopted has certainly been justified by results.

## WAR WORK AND THE OFFICE OF WORKS.

Referring to the appointment of Sir Alfred Mond as First Commissioner of Works, a writer in the "Daily Chronicle" recalls that Sir Alfred, who is member of Parliament for Swansea, was educated at Cheltenham, Cambridge, and Edinburgh, and after completing his academical career was called to the Bar at the Inner Temple. Then he entered the works at Northwich and became a managing director of the Brunner, Mond Company. A man accustomed to business affairs like Sir Alfred Mond could have had no difficulty in adapting himself to the direction of the Office of Works. He has the valuable quality of

being interested intensely in any work to which he sets his hand. Full of enthusiasm for his new duties, the energy emanating from his personality pervades the whole department. The functions of the Office of Works are very varied. Not only the Royal Palaces (including the Palace of Westminster) and the Royal parks, but also all Government buildings in London (including the great national museums and the Law Courts), post-office buildings throughout the country, the structure of the British embassies, and most of the Consulates abroad—all these come within its purview. It combines the functions of the French Ministry of Fine Arts and the Ministry of Public Works, without the full powers of either. It has a permanent staff of 3,000; its normal expenditure on public works is about £2,500,000 per annum. Among its minor duties is the supply of coal to Government institutions and departments. Its coal purchases average 750,000 tons a year, and of these it distributes 250,000 tons by its own staff in London.

Since the War began the Office of Works has been working at high pressure, for it has been, and still is, carrying out great building schemes in various parts of the country for the Ministry of Munitions. The Woolwich housing scheme was executed by the Department in record time—the fastest piece of building in the world.

In spite of high wages and overtime the net cost of the buildings erected by this Department for the Ministry of Munitions is surprisingly moderate—in fact, below the peace level, so powerful is the effect on production of a sustained patriotic impulse. In the design and the execution of these vast building schemes, the Office of Works is fortunate in having at the head of its architectural department a man of brilliant abilities and inexhaustible energy, viz., Mr. Frank Baines, who is reconstructing the great roof of Westminster Hall.

The Office of Works is now the supreme authority for providing War accommodation for new and expanding Government Departments and for the utilisation of commandeered buildings. No longer is every Department a law to itself in these matters. Sir Alfred Mond is also investigating how existing accommodation is utilised. Already substantial economies have been effected. Reference has already been made to his project, sanctioned by the Cabinet, for the creation of a National War Museum. In these and in other directions his powers of initiative are finding expression. The Office of Works has never had a more resourceful chief.

## A WAR FACTORY.

The view reproduced on page 181 shows a certain war factory, the whereabouts of which we are forbidden to disclose. The total floor area is about 60,000 ft. super., including side galleries; there is only one internal column in the main room to every 10,800 ft. super. of floor area. The general construction of the building is reinforced concrete for the side galleries and columns to same, with a reinforced-concrete general framework to the outside walls and four internal detached columns carrying the main steel girders, which take the steel principals and roofing, the roof being covered with wood purlins, boarding, felt, and slate. The gutters are covered with mineral rock asphalt, as, also, are the flat side roofs to the galleries. This building represents the most modern type of factory designed to meet the ever-increasing demand for uninterrupted floor space. It gives an opportunity for an ideal arrangement of plant, which is not always possible where a large number of columns are employed. The building is completely fitted out with a sprinkler installation. Mr. A. Alban H. Scott was the architect.



GUN FACTORY BUILDINGS IN REINFORCED CONCRETE: GENERAL VIEW OF INTERIOR.



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#### ARCHITECTS' WAR COMMITTEE.

The object of the Professional Employment Committee is to provide temporary paid work for British architects who are entirely dependent upon their profession for their living, and whose present difficulties are due entirely to the war. Applications can only be considered from architects who are ineligible for military service and unable to obtain War work of a professional nature. Enquiries should be addressed to the Honorary Secretary of the Committee at 28, Bedford Square, London, W.C.

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### Miscellaneous.—Continued.



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The Commissioner of H.M. Woods, Forests, and Land Revenues will be prepared to receive, not later than the 30th June, 1917, TENDERS for a BUILDING LEASE, for a term of 80 years, of the land at the South-east corner of Piccadilly Circus (adjoining the Criterion Theatre and Restaurant) comprising the sites of Nos. 24, 26, 28, 30, 32, 34, and 36, Regent Street, S.W.1, containing an area of about 6,950 square feet, having road frontage of about 73 feet to Piccadilly Circus, 112 feet to Regent Street, and 52 feet to Jermyn Street, and suitable for the erection thereon (after the War) of shops, showrooms, and offices, or similar buildings. Detailed particulars, plans, conditions, and form of tender are being prepared and will shortly be obtainable from Mr. John Murray, F.R.I.B.A., 11 Suffolk Street, Pall Mall, S.W.1, or from the office of H.M. Woods, etc., 1, Whitehall, S.W.1. 97

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# THE ARCHITECTS' AND BUILDERS' JOURNAL.

APRIL 18, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1163.

ARCHITECTURAL competitions are nowadays so rare that any instance of their surviving the horrors of war attracts special attention. Derby Board of Guardians, requiring designs for a new infirmary which is estimated to cost fifty thousand pounds, have decided to invite local architects to compete. It is not altogether strange that the present opportunity for arranging competitions is not more freely used. Architects, it is true, may be assumed to have ample leisure for the preparation of designs, and in that respect the conditions are in some degree favourable; but corporations are naturally shy of making arrangements that the turn of events may upset. It is probably borne in mind also that competitions held now would exclude the men of service age, and this is a point of which architectural organisations are not likely to complain, since they have set the excellent example of suspending competition in every shape. Their success in procuring the postponement of the Canberra competition is still fresh in the memory. Consequently the decision of the Derby Board of Guardians leaves us cold. Moreover, a locally limited competition is of very dubious validity. It savours too much of a rather morbid parochialism, especially when the crucial test is that competitors must be "ratepayers in the town." It is a curious basis for design; and one would not be overwhelmed with astonishment if some day it were developed to some such logical issue as "none below the grade of a *bona-fide* £40 householder will be allowed to compete." Of the several interesting variants on limited competition, that involving the ratepayer qualification is surely the worst. We would venture to suggest to the Derby Board of Guardians that they should follow precedent by suspending their competition for the duration of the war, and that in reopening the project they should abolish the local restriction. That would be the broadest way of "considering the interests of the ratepayers."

As an addendum to the housing scheme which Mr. James Thomson has prepared at the request of Dundee Corporation, a model of one of the houses is to be made. It is surprising that so useful a practice is not more often adopted. Models, properly made, are no doubt rather costly, but the expense is an incon siderable item where the scheme is large, and may, indeed, turn out to be an excellent investment, yielding an appreciable return in economies of which the opportunities become much more clearly evident where the details are seen in three dimensions. It is notorious that very few people can read a plan. All, however, can appreciate a model, which invariably stimulates interest to a high pitch. There is, of course, always the possibility of a model meeting with the fate which attended that made by Wren for St. Paul's. It tempts unqualified persons, who would hesitate to criticise a drawing, to spoil the design, or at least to carp at it; and the untrained eye seldom makes due allowance for the inevitable differences in scale and texture which somewhat detract from the fidelity of a model. On the whole, however, the advantages of having a model are incontestable, and we should like to see the practice extended. It has not made much headway since, in the 'sixties and 'seventies, that astute amateur of architecture, Sir Edmund Beckett (Lord Grimthorpe) gave it a temporary vogue by having models made for most of the work in which he was

interested, and by taking every opportunity of advocating this course; though his example, considering the character of much of his architectural work—at St. Albans, for instance—would not greatly commend any method by which he reached such dubious results.

Mr. Laurence Binyon states forcibly and clearly, in "The New Statesman," the case for making London tidy. Parodying a too familiar catch-phrase, he heads his article, "Business for Business' Sake." Ridiculing as absurd the notion that what is done with a structure which occupies a conspicuous position on a central reach of the Thames in the heart of London (and which conspicuously defaces the position) is a question which affects nothing but the structure itself, Mr. Binyon shows that it is no less fallacious to maintain that the question is purely financial. These fallacies, he says, imply "an attitude of mind which it is before all things necessary to combat and convert." He contends that the only really practical way of dealing with such matters is the imaginative way, and that it is by fixing our attention on the immediate urgency and the immediate cost, without considering the relation of one building to another or the relation of the needs of to-day to the needs of to-morrow—in other words, by following the supposedly practical methods of the business man—that we make "such a mess" of our great towns.

"Just picture to yourself the change," Mr. Binyon writes, "the extraordinary difference of impression it would mean for a foreigner arriving in London, as well as for ourselves"—the impression, that is, which would be created if the Burns-Blomfield-Webb scheme for a new Charing Cross Bridge were to materialise—"and you will feel amazed that we have allowed these dirty red tubes and girders in our midst so long. The mere thought of their removal, as one looks at the noble reach of the river, exhilarates and expands the lungs. These things react on the nerves and on the well-being of a man more than he is aware of," and "'Business is Business' can be as inhuman, devastating, and stupid a motto as 'War is War.'" It is sound doctrine, strongly enforced. This narrow pedantry of business has been as cruel in its effects as any other shortsighted and wicked fanaticism, and, like all tyrannies, it reacts upon itself. Mr. Binyon apparently disdains to say—but we have no such scruple—that good art is good business, and that the conception of business as excluding the imagination discards its most powerful asset. At the risk of an accusation of sacrilege, we will add that the imagination can be "broken to harness," or saddled and bitted and bridled to high and potent purpose in business, and that the inveterate view of it as something that must be kept well without the pale of practical life is now hopelessly out of date. To allow it to run wild is to be culpable in an almost incredibly foolish waste of force. Mr. Binyon brings the matter of the Charing Cross Bridge to its lowest terms in asking, "I wonder if the directors of the company think that their clerks would perform their duties just as well if they came to work in ragged, dirty clothes and a generally sluttish condition?" They would do their work the worse from their loss of self-respect; and it is in this sad case that sluttish London finds itself to-day.



Dublin's demand for financial assistance and other facilities for rebuilding is at length being met, in spite of, rather than because of, the severe and ill-advised heckling of Mr. Duke by Irish members in the House of Commons. Mr. Grady, having rather rashly compared the celerity of rebuilding in the London explosion area with the dilatoriness towards Dublin, Mr. Duke made the somewhat sardonic reply that "There was no analogy, as far as he could see, between the case of property destroyed by accident in London and that of property destroyed as the result of an outbreak of rebellion." Here was a sharper contrast than Mr. Grady could have intended; but this pointed reminder that circumstances alter cases ought not to have been made necessary. Surely the Irish members must see that it was the bounden duty of the Government to rehouse with all possible speed the labouring population rendered homeless by an explosion at a Government factory; whereas their moral obligation towards Dublin is by no means so obvious. Towards the Dublin shopkeepers, who are the innocent victims of a rebellious outbreak, the Government have been consistently sympathetic, and the systematic heckling to which they have been subjected was not likely to confirm them in this magnanimity; and the rebuke implied in Mr. Duke's reference to what may be called, in a double sense, damaging facts, should serve as a hint that imputations of unfairness are as untoward as they are tactless. There will, we trust, be no unnecessary delay in the reconstruction of the Dublin devastated area; but we are equally anxious that there shall be no hustling. In the best interests of Dublin, we hope that the rebuilding may be done with sufficient deliberation to ensure that it shall be done well, and with due regard to harmonious and dignified design. If that object is secured, the displaced shopkeepers (whose hardships the Government, we are assured, do not regard with the cold indifference so freely imputed) will ultimately reap a rich reward for the delay in re-establishment.

Concerning St. George's Hall, Liverpool, a newspaper correspondent expresses surprise that its architect should have been so successful in embodying and expressing the Classical spirit without ever having enjoyed the advantages of travel. Without denying for a moment that it is a very great advantage to see in situ the actual work of the monumental builders, one is nevertheless convinced that such "ocular demonstration" is not absolutely essential to a vivid perception—in the mind's eye—of a building of which pictures and plans are available, and of which the dimensions have been accurately ascertained. It is, indeed, an important part of an architect's training that he shall be able to visualise clearly and instantly in three dimensions a building represented on a plane surface. If he have what is called a good visual memory, he can do more than this—not only can he conjure up a more or less vivid vision of any building which has impressed him, but he can—"as imagination bodies forth the forms of things unknown"—see mentally the building he wishes to design—see it, that is, before he attempts to draw it; and unfortunately the delineation always falls considerably short of the dream-design. In this respect temperaments differ greatly. Just as some authors cannot compose without the aid of a pen—it is said that Dickens could not, and that when writing leaders for the "Daily News" he never knew what line he was going to take until he was led by his pen, which was to him as a blind man's dog—so there are doubtless many architects who require pencil and paper as first-aid or stimulus. Designing in this tentative and piecemeal way—objective designing, one may perhaps call it—is probably more common than that which is a more or less imperfect record of a subjective conception. That Elmes had the inner vision

strongly inherent there can be as little doubt as that he fed and strengthened it by the sedulous and imaginative study of all the accessible documents.

Long before the war, periodical complaints of the swift exhaustion of the world's timber supply often led us to wonder whether any suitable substitute could be found for the wooden palings which separate hundreds of thousands of suburban back-gardens. Possibly there is a very unnecessary waste of wood, although we must confess the difficulty of hitting upon a slightly or otherwise suitable substitute. Brick walling is out of the question, if only because of the cost. Also it excludes light and air, whereas the palings let it through; and this is a vital consideration to the cultivator of a small back garden. Hedges occupy too much space require too much attention and give easy access to marauding cats and dogs. Iron railings are costly and rather ghastly. Wire or manilla netting, requiring a slight framework of wood with a few posts as standards, would effect a considerable economy in timber, and presents a fairly decent though "garden-suburby" appearance until the meshes wear ragged. Until they reach the tatterdemalion stage they look better than the wood palings, which with their rough texture, their painful exhibition of knots, shakes, and all the diseases known to the faculty, and with their unequally distributed smearing of tar, do not contribute very generously to the amenities. But the question is, what shall be substituted for them? In view of the enormous amount of small-house-building that is already overdue, it is rather important to solve this minor problem.

At their last meeting before the Easter recess, the London County Council adopted a report of their Education Committee recommending the abolition of exemptions for children under the age of fourteen, and the establishment, after the war, of compulsory continuation education for young people from fourteen to seventeen. It is evident, therefore, that the Council is substantially in agreement with the recommendations of the Departmental Committee, and is resolved to be in the van of the new movement. It will be, no doubt among the first of the authorities to build or to modify schools in accordance with the new policy, and it is therefore under a moral obligation that its lead shall be in every way exemplary of excellence rather than of the severe economy foreshadowed in a former recommendation of the Education Committee to cheapen schools to the extent of denuding them of all external embellishment. We are sorry to see that the Council has sanctioned this extreme severity. It has agreed also that "until further order" (a welcome saving clause) the amended plans and specifications for the proposed "Stawage" school, Greenwich, shall form the authorised standard for school buildings. We are to have an opportunity of seeing "as soon as possible" what the new type of school will look like when built. In the meantime all that need be said is that the higher economy does not discount the value of external appearance, which is itself a most potent and most persistent means of education. Whether that means of education is to be good, bad, or indifferent, is a question that now hangs in the balance, and we very earnestly urge that it must be settled in the interests of amenity rather than in those of a false economy that in its ultimate issues, is purely wasteful. This is a matter of so much public and professional importance that we think the organised architects would be well advised to take it in hand promptly and vigorously, approaching first the Council, and afterwards, if necessary, the Minister of Education, who, being a practical expert in education, and therefore acquainted with the value of æsthetics, may be confidently expected to sympathise with the architectural view.





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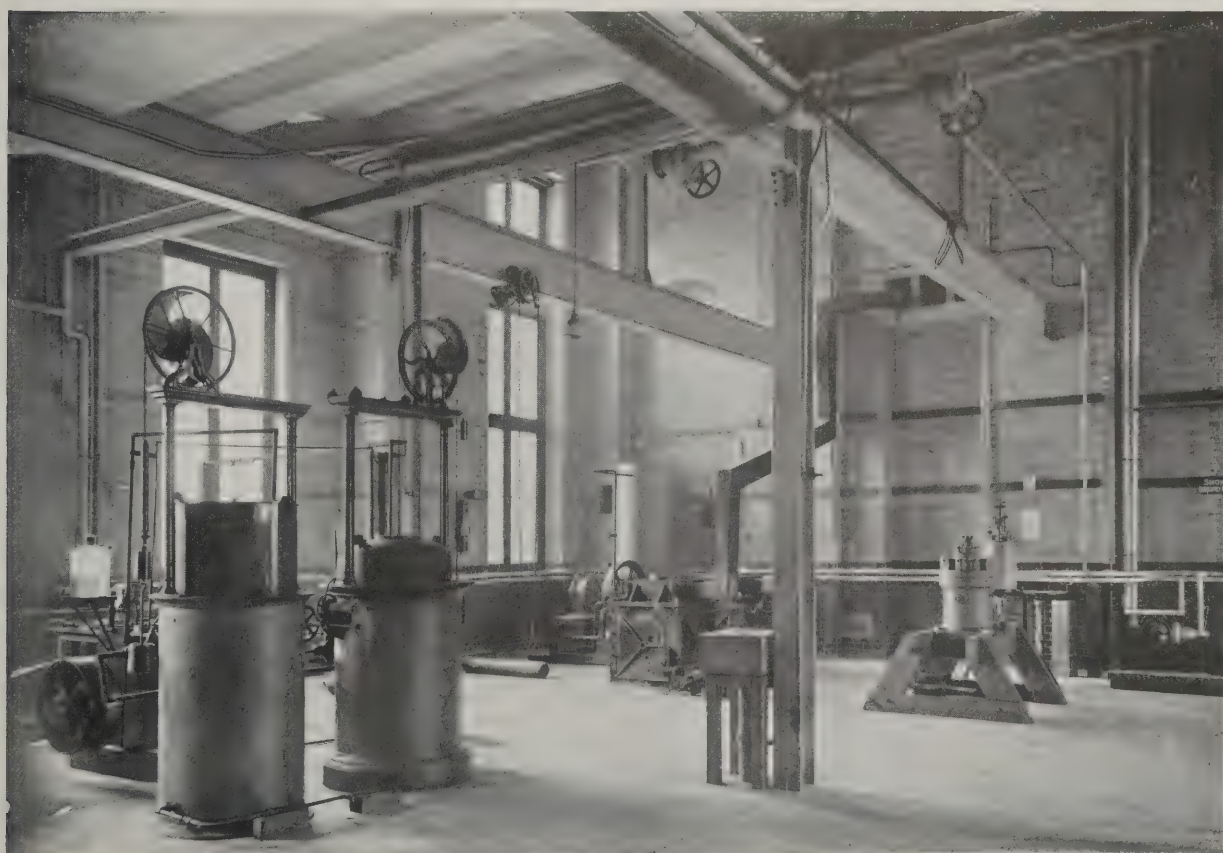
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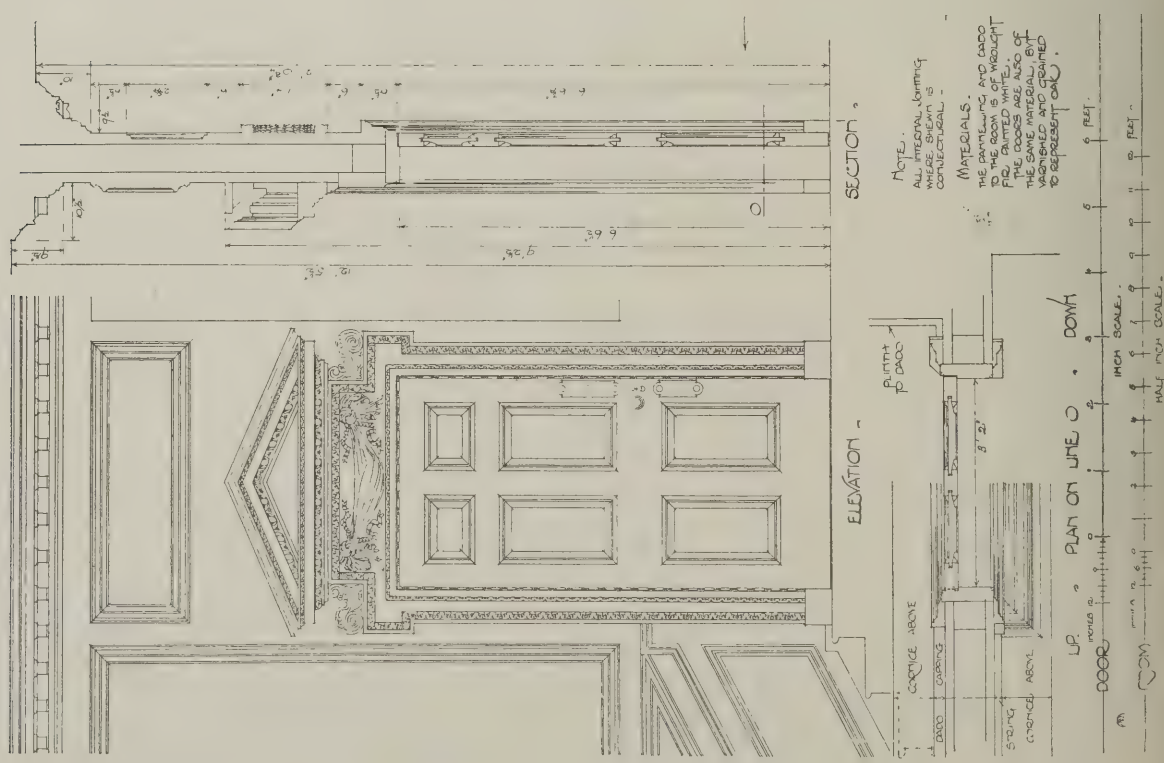
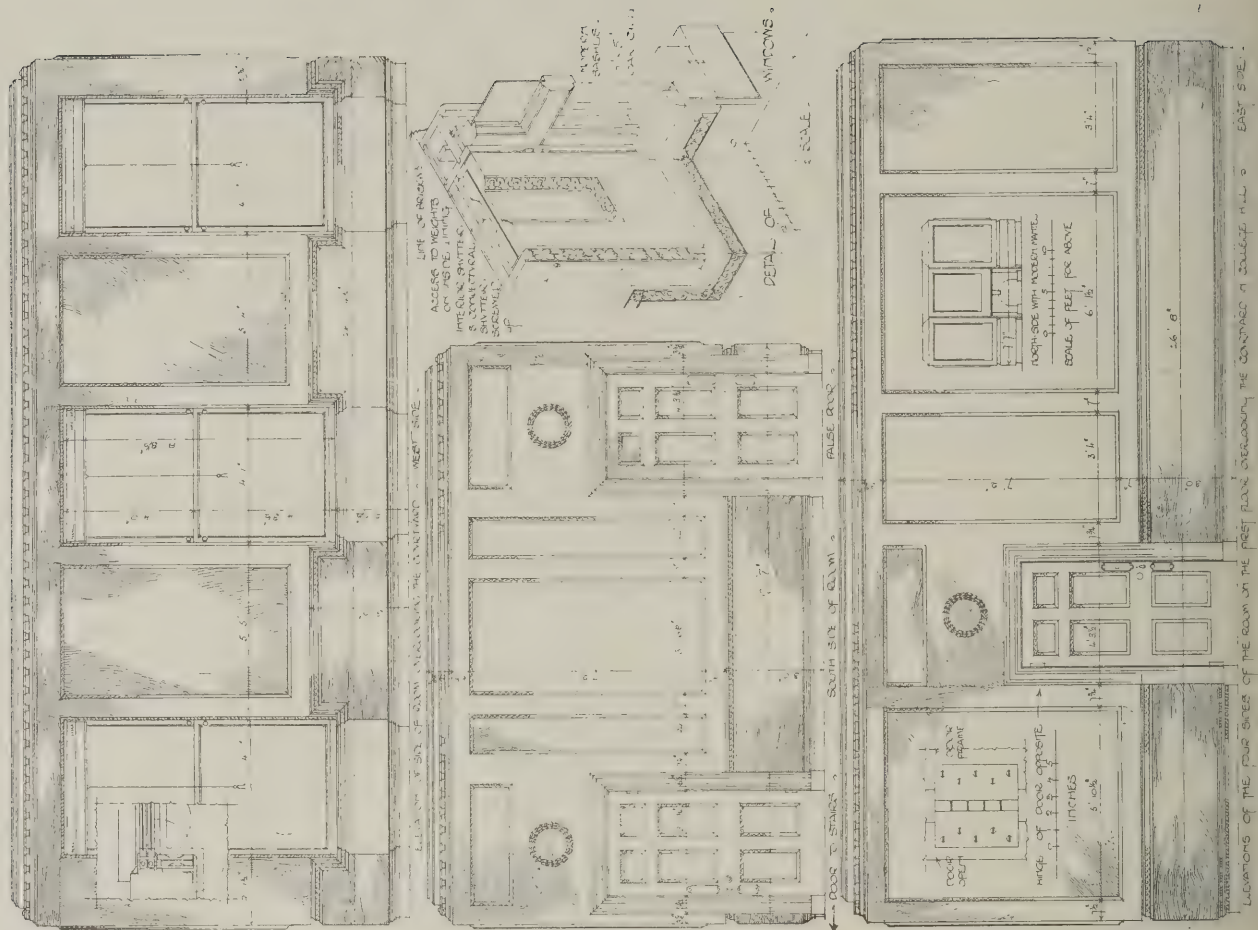
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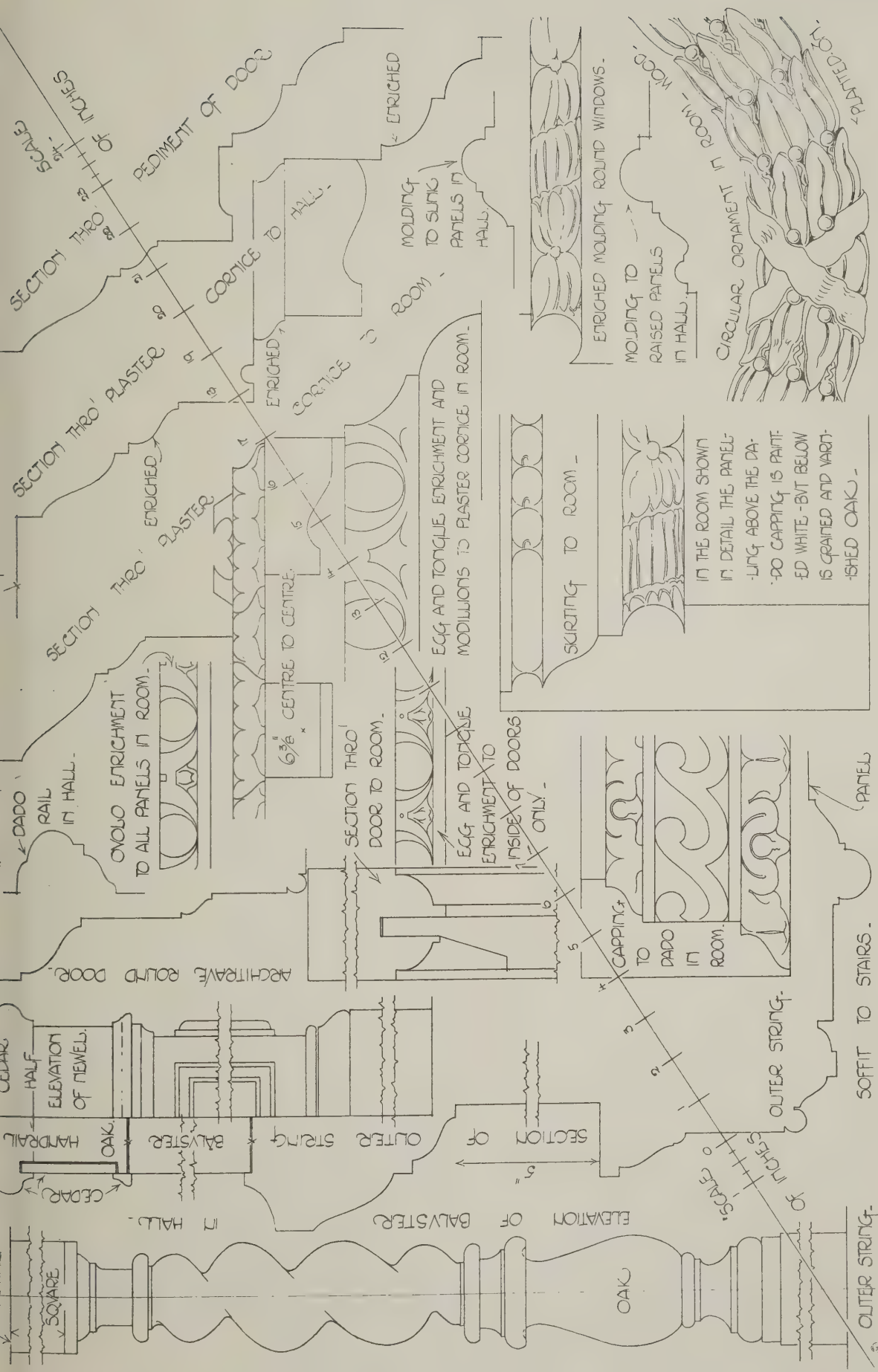


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DETAILS OF CRAFTSMANSHIP (SERIES II.). XXV.—INTERIOR DETAILS FROM 21, COLLEGE HILL, LONDON, E.C. THE HOUSE IS ATTRIBUTED TO SIR CHRISTOPHER WREN, AND THE CARVING TO GRINLING GIBBONS.

MEASURED AND DRAWN BY LAWRENCE FURNISS.





## THE PLATES.

*Union of London and Smiths Bank, Regent Street.*

THIS building was erected by Messrs. Dickins and Jones, of Regent Street, from the designs of Messrs. Stephens and Munt, architects, of Hans Road, S.W. It is part of a large block extending from Regent Street to Little Argyll Street, and standing on land belonging to the Crown. The general elevation of the whole block was designed by Mr. Henry Tanner, architect, of Regent Street. The ground floor and basement is occupied by the Union of London and Smiths Bank, for whom the interior arrangements were designed by Messrs. Dunn, Watson, and Curtis Green. The general contractor was Mr. James Carmichael, of Wandsworth, under whom work was executed by the following sub-contractors: Heating and ventilating, Richard Crittall and Co., Wardour Street; bank fittings, F. Sage and Co., of Gray's Inn Road; electric wiring, F. George Howard, Berners Street; marble paving, Burke and Co., Rathbone Place; revolving shutters, Dennison and Kett, Queen Victoria Street; bronze sashes, Crittall Manufacturing Co.

*New Laboratories, University College, London.*

On one of the plates in this issue illustrations are given of two laboratories at University College, Gower Street, designed by Professor F. M. Simpson, F.R.I.B.A. The first (for Inorganic Chemistry) is fitted with benches having tops of unglazed, highly

compressed fire-proof tiles. These are easily kept clean, and have not been found to increase breakages. The second (Electrical and Technical) is installed with some fine experimental plant. The laboratory is specially designed for large scale operations, such as the examination of a new process with a view to its utilisation for manufacturing purposes. To this use, indeed, the plant has already been put, with results which have been of great benefit to the Government in the design of a special factory for work in connection with the War. The chief aim of the University is to train students so that they may be of use to the State. Not only is there every facility for teaching students up to the degree standard, but also post-graduate work and research will be possible to an extent beyond that in most laboratories. This arrangement is one of the institution's most useful features.

*No. 21, College Hill, London, E.C.*

This house, whether or not, Wren built it and lived in it—and tradition (unsupported, we believe, by any clear documentary evidence) holds that he did both—is interesting on its own merits as a fine specimen of the domestic architecture of the Wren period. Mr. Lawrence Furniss's measured drawings, which were made in 1907, fully justify this claim. It is possible that some of the carving is rightly attributed to Grinling Gibbons, but here, again, there is a lack of positive proof. The building is near the church of St. Michael, College Hill, and shows two very characteristic hooded doorways—or, rather, gateways, for they open on to a courtyard.

## CORRESPONDENCE.

*Professional Papers for the Front.*

*To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIRS,—I have received a letter from a writer, who is personally unknown, in which he says:—

Since my departure from home on active military service, some time ago, I am denied the pleasure of reading the current issues of the trade journals. I am not grumbling, but as I seem to be losing all trace of current events, my mind travels back, and I remember your offer in trade papers some time ago to send to readers certain books, periodicals, etc., which you had read and finished with. Hence my letter to you.

Perhaps you cannot imagine what it is like to be away from trade news for months. It is miserable. There are many others like myself, who would be pleased to have trade papers sent to them regularly. It would give them something to look forward to and something to think about besides this terrible war.

I am sure there are many papers being sent out by those who have relatives in the Army and Navy. There are also many architects' assistants, as well as apprentices and men from shops, works, and builders' offices, who have no papers sent to them, who would be pleased to receive the papers. Hence my reason for sending you this letter.

I hope that some of the lucky ones who are left at home will take the hint and send any papers to those who are fighting for us.

King's Lynn. J. H. KERNER-GREENWOOD.

[We need not say how cordially we welcome Mr. Kerner-Greenwood's suggestion, which, in effect, we had long anticipated. From the outbreak of the war we have sent to the front a regular supply of free copies of the Journal. Our effort, however, being necessarily limited, we are glad of the evidence furnished by our correspondent that it is so highly appreciated as to be worth backing up.—EDS. A. AND B.J.]



UNION OF LONDON AND SMITHS BANK, REGENT STREET,  
LONDON, W.

STEPHENS & MUNT AND HENRY TANNER, ARCHITECTS.



## DUNDEE HOUSING AND TOWN PLANNING SCHEMES.

*Mr. James Thomson, City Engineer and City Architect of Dundee, has presented to the Housing and Town Planning Committee of the Dundee Town Council a concise but illuminating report on preparation for work after the end of the War, and on proposed housing schemes. Four lay-outs are illustrated, and to these are added block plans, and also plans of three suggested types of houses. The last-named plans are here reproduced, together with the block plan of the largest of the schemes—that for Springhill, which, however, has been abandoned, but is nevertheless intrinsically interesting.*

THE housing sites (Mr. Thomson states) which naturally suggest themselves at the outset as suitable adjoin (a) the north, (b) the east, and (c) the west margins of the industrial areas of the city, and are designated respectively the Stirling Park Scheme, the Springhill Scheme, and the Logie Scheme.

(a) On the north, land at Stirling Park, extending to about nine acres, the property of the Town Council as Patrons of the Hospital of Dundee, and situated south of Hospital Wynd, could be made available for a housing scheme. (b) On the east, land adjoining Springhill, extending to about thirty-one acres, containing five separate ownerships, situated between Broughty Ferry Road and Arbroath Road, although not all that could be desired from the point of view of levels, would be a convenient site to meet the housing requirements of men employed at the harbour, and of those whose work is within the industrial district west and north-west of Springhill. (c) On the west, land at Logie, bordering as it does the Polepark, Brook Street, and Blackness districts, is favourably situated for a housing scheme. It extends to over twenty acres, and is practically all agricultural land.

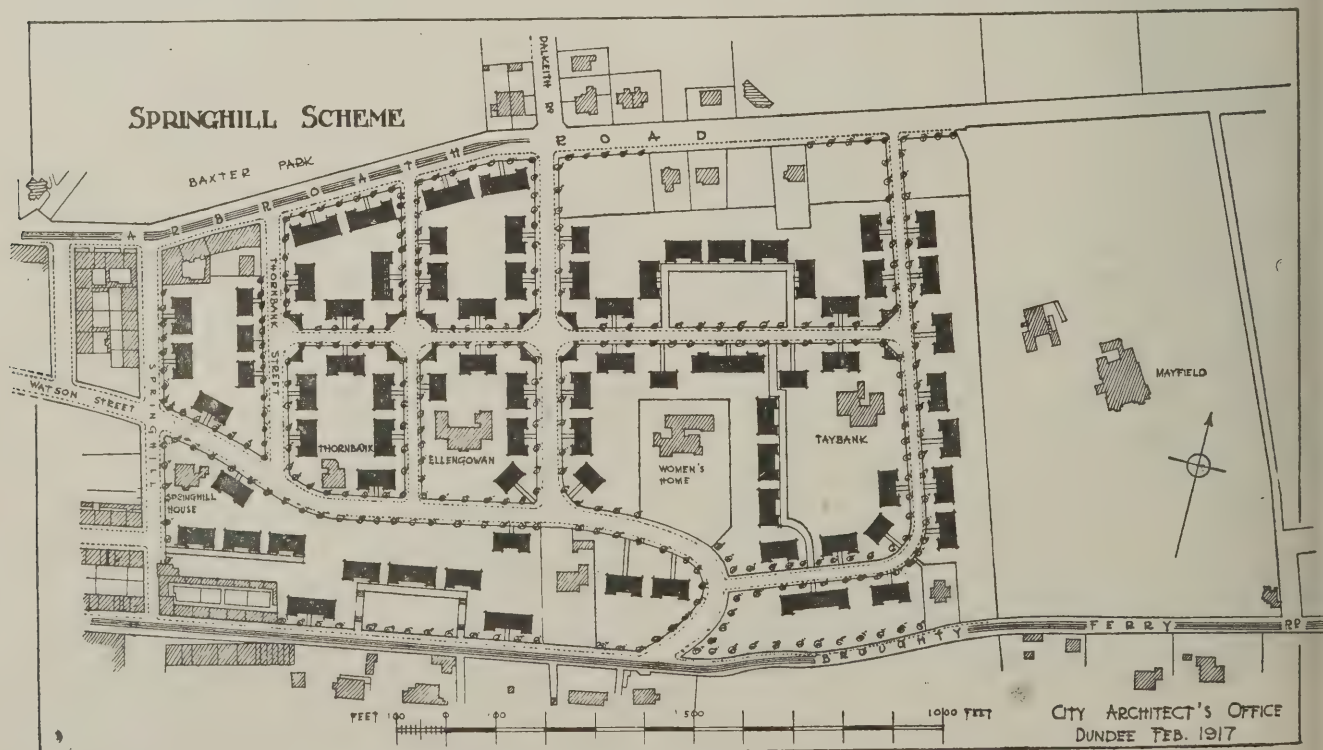
If, says Mr. Thomson, land can be acquired at a reasonable price, the buildings can quite justifiably be spread over a much larger area than formerly, and all reasonable means taken to provide the dwellers in the new tenements with facilities and surroundings as good as those provided for dwellers in cottages. With these objects in view, it is recommended that in the entire area of each of the schemes the height of tenements be limited to two storeys, with two exceptions in the Stirling Park Scheme, where the surroundings and special circumstances

justify three storeys. In point of fact, the new type of tenement should be a happy mean between the former barrack-like tenement and the modern cottage.

Calculated on the basis of erecting houses of three rooms, of two rooms, and of one room, each equipped with proper facilities and conveniences, the number should not exceed twenty to the acre, and this would compare with the existing practice of approximately eighty to the acre in tenement areas.

In designing houses of one room, of two rooms, and of three rooms, each containing thorough modern equipment, the aim has been to provide accommodation suitable for the requirements of those employed in the immediately adjoining industrial areas. Sketch plans have been prepared of a house which should adequately meet the requirements of (a) a single woman or two single women or a widow with no family, (b) of a married couple with a small family, and (c) of a married couple with a large family; and in the preparation of these plans the opportunity is taken of showing how persons of the working classes who are sufficiently aspiring may be enabled, as they are clearly entitled, to raise themselves from their present insanitary and sordid surroundings to dwellings which provide nothing more than the just due of human beings.

Types A, B, and C, illustrated on p. 187, indicate the minimum of accommodation reasonably required in houses of the working classes. It is specially emphasised that each should contain a living room of ample size, well lighted and ventilated, and with larder in direct communication with the outer air; a kitchen-scully with gas cooker, dresser, sink, and coal bunker, with press over for utensils; and



DUNDEE HOUSING AND TOWN PLANNING: SPRINGHILL SCHEME.



an inside water-closet entering off the kitchen-scuttery.

There should be no ash-pits, and a special system of ash bins would be provided for the removal of house refuse. Neither is there any provision for separate washhouses on the back ground nor for baths within the dwelling-houses, a central building containing washhouses and baths being suggested for each scheme of housing; and from this central building it is recommended, having regard to the ample steam power therein, that a system of hot water supply and heating be installed and laid on, subject to control and restriction, to each dwelling-house. In this connection there can be no doubt such an installation would tend to economy in fuel, convenience to occupiers, and improved sanitary conditions in dispensing with smoke from numerous chimneys.

The Housing and Town-Planning Committee of Dundee Town Council visited, on April 4, two of the sites upon which the City Engineer recommends the erection of municipal houses. Mr. Thomson's carefully prepared report upon the subject was generally admitted to be admirable, and while the committee agreed to receive it they adjourned consideration of it till a further date. Mr. Thomson indicated that he wished the committee to drop the Springhill scheme, because very considerable difficulties with respect, it is understood, to the acquisition of the land, were likely to arise. He was satisfied that they would do better. He wanted the people to see the type of house suggested for the schemes, and he asked the permission of the committee to sanction the expenditure of £200 in the preparation of a full-sized model of a three-roomed house, so that the public would see what they were really going to have. He was satisfied that they would make more progress in this way than with all the plans and reports he would submit. Mr. Thomson was granted permission to construct a model house. (Comment upon this incident will be found in the second paragraph of our Editorial notes on p. 183.)

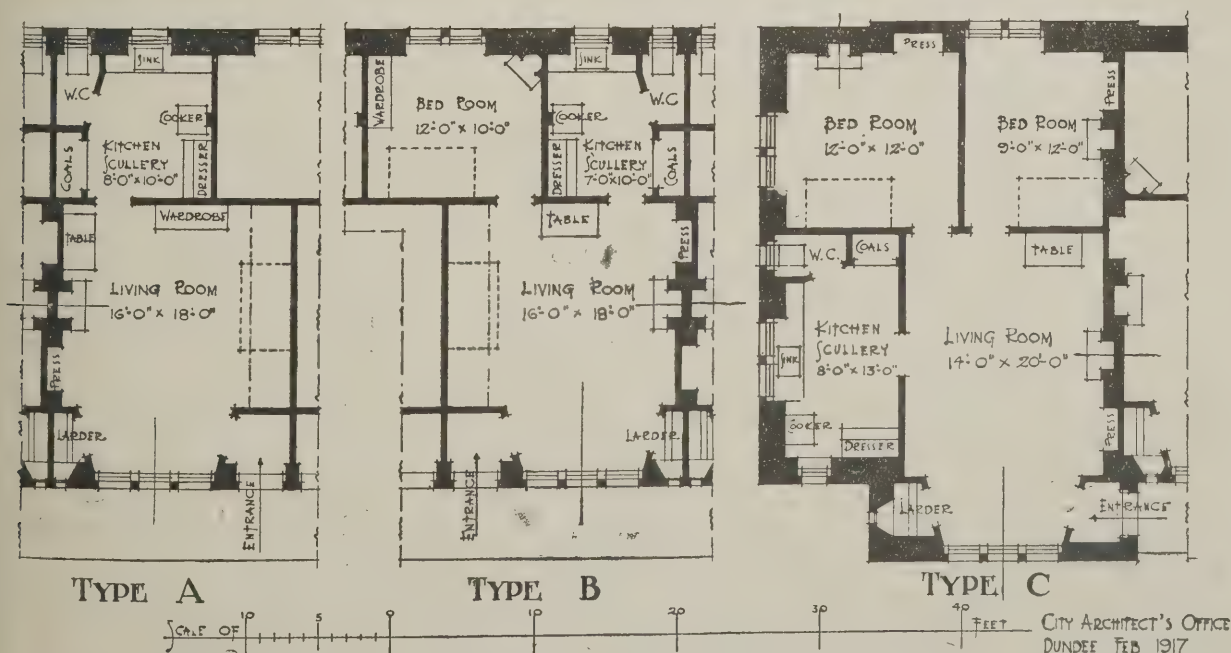
In his report to the Committee, Mr. Thomson stated that consideration of preliminary arrangements for

work to be entered upon after the war and selection of land suitable for housing of the working classes, turned entirely upon the question of whether the Town Council were to proceed with schemes of housing. It was generally recognised, particularly in industrial centres, that schemes of housing have become imperative, and if the Town Council were favourably to consider the solution of the housing problem in Dundee, the adjustment of preliminary arrangements and the selection of suitable land became the first considerations; and, in order that success might be assured, it was suggested that any resolution or instructions to make preliminary arrangements should be such as would permit a commencement to be made with work on short notice, because the demand for work was sure to be urgent, and there was much preparatory work to be done.

In making preparations for work, and in considering schemes of housing, the preliminary arrangements which were essential included: (1) The adjustment of provisional agreements for acquiring land near industrial districts either by feu or purchase; (2) the preparation of plans of the lay out of the land proposed to be acquired; (3) the making of surveys, the taking of levels, and preparing plans and sections of streets and sewers; (4) fixing the type and size of houses proposed and the number of houses to the acre for the respective schemes; (5) the designing of houses of the type and size suitable for the respective districts, and the preparation of plans, specifications, and schedules of quantities; (6) the provision of tools, plant, and materials required for the formation of streets and the construction of sewers; (7) the selection of foremen and timekeepers, and other administrative preparations; (8) the adjustment of provisional agreements with agricultural and other tenants for obtaining entry to land; (9) the preparation of an estimate of the probable cost; and (10) obtaining the approval of the Local Government Board to the schemes of housing.

[This excellent summary of reasons for taking Time by the forelock should be brought to the notice of all corporations that seem inclined to postpone preparation until the time for action arrives.]

### SUGGESTED TYPES OF HOUSES





## DEVON AND EXETER ARCHITECTURAL SOCIETY.

The annual meeting of this society, which embraces Devon and Cornwall, and is in alliance with the Royal Institute of British Architects, was held at the Royal Clarence Hotel, Exeter, the president, Mr. C. Cheverton, M.S.A., in the chair. The annual report, presented by the hon. secretary, was, together with the balance-sheet, received and adopted. It expresses satisfaction that the membership has been well maintained; and after removing two names by death and two by resignation, the roll of members now stands at 75. With sincere regret the decease is recorded of two associate members, Mr. C. H. L. Varcoe, of Plymouth, who was just leaving for the Cape, and Sergeant C. H. Phillips, of Devonport, who joined the 105th Saskatoon Fusiliers, 1st Canadian Expeditionary Force, and was killed in action in France. The decease of Mr. E. Appleton, of Torquay, a past president and for many years a member of the society, is also recorded. The council has had under consideration the question of members of the R.I.B.A. being required to become members of the allied societies in the district in which they reside. A circular letter was sent to all the allied societies, asking for their support and opinion on this matter, and their replies are almost unanimous in favour of the council's suggestion. The council considered it inadvisable to hold summer excursions during the past two years on account of the crisis of the present war, but hope to continue this annual event after the termination of the war. The council decided, in common with the R.I.B.A. and other societies, to suspend its by-laws re nomination of officers and council for the year 1916, and that this principle be adopted and the present officers and council to continue in office. The President delivered his address, from which we make the following extracts:—

"In my opinion the need for greater efforts to secure early registration has been clearly proved by the happenings during the past two years. It is a matter of the greatest regret that the Registration Bill was not pushed forward with more force a few years ago. Had it been, my firm belief is that the position of architects at the present moment would have been very different and very much happier. Much of the housing and other work that has been carried out by others would have been assuredly placed in the hands of architects, and the results would possibly have been more satisfactory to all concerned. The profession has suffered in no inconsiderable measure through possessing no recognised status, and has been ignored on every hand, when it could have been of the greatest assistance to the nation's requirements at the very moment when it was most needed. We ought to secure national recognition as soon as possible. The Royal Institute of British Architects was founded eighty-three years ago for the conduct and advancement of the profession. It has the co-operation and support throughout the United Kingdom of nineteen allied architectural societies, and it is quite time to demand that more general interest and sympathy with the welfare of architects practising in the provinces shall be taken by the council of the R.I.B.A. Greater co-operation amongst the allied societies and more real support from the Institute for country architects is urgently needed. A President of the R.I.B.A. ought

to be occasionally chosen from the provinces, and every allied society should have continuous representation on the council.

"It is almost inconceivable that the R.I.B.A., as an organised body, 'were strangers to the Government,' and it is hoped that the council of the Institute will act on the advice of their President, who said, 'It must be part of our work in the future to forge the connecting link so that if ever again a like emergency should arise we should find ourselves called upon and ready to place our skill and experience at the service of the State.' My earnest hope is that the 'connecting link' will be State recognition of the practice of architecture as a registered profession, and may it be strongly forged long before similar conditions to those we are passing through occur again.

"Recently a deputation, representative of the architectural profession throughout the United Kingdom, waited upon the Director-General of National Service to place the claims of architects before the Government, and to obtain the utilisation of architects by the State in connection with the National Service Act. This deputation was favourably received, and it is to be hoped that the services of architects will be utilised throughout the country in a proper manner. If the Institute cannot assist us to obtain national recognition, it must be up to the allied societies to propound some scheme whereby provincial architects can receive recognition by the public as being essential and indispensable, the time has surely arrived when we could encourage public opinion to realise that architecture is necessary for the benefit of the people, to be the means of uplifting their thoughts and emotions, and to be absolutely necessary for the carrying on of successful trading and to ensure increased happiness and contentment in the lives of our citizens. There can be no great future for the town that will not build with dignity, character, and importance. The ideals of public life and ambitions are always reflected in its public buildings. Is it too much to ask our public men to bear in mind that their work in real progressive buildings will for ever be lasting monuments and records of their labours? A town is classed as interesting or otherwise by the outward appearance of its buildings, and it is not fair to architects that buildings should be erected by persons who are incompetent and have no knowledge of what is good or bad in architecture. It is beyond me to understand why speculative builders or any other persons should be allowed to erect buildings after their own designs when architecture is such an important factor in the life and happiness of the community. We must develop public interest in all that is good and artistic in sound and perfect architecture. Appreciation of the beauty of architecture, as expressed in most public buildings, should be taught in the schools, and the art side of education should be developed on architectural lines. An outline of the various orders and styles of architecture, and the value and reason for the existence of the different parts of well-known buildings, should be explained to and interest created in the pupils. Economy is being preached throughout the country, and it is surely an indisputable fact that it is absolutely necessary to employ the services of an architect in order to carry out building work wisely and with economy. The public should be educated to appreciate this. Several towns have set up departments of architecture in conjunction with their schools of art, which have

been recognised by the R.I.B.A., and students who pass through a prescribed course of study are exempted from the R.I.B.A. intermediate examination. We should endeavour to establish similar departments in our large towns, such as Exeter, Plymouth, and Truro; use all means in our power to promote interest in good architecture, encourage the speculative builder to appreciate the true artistic side in building work, and impress upon builders generally the necessity of building with true architectural sense. It is to be hoped in the future that more of the public work of an architectural character, at present dealt with by public officials, should be carried out by architects practising in the immediate districts."

A cordial vote of thanks was proposed by Mr. J. Jerman, seconded by Mr. A. S. Parker, for the president's address and his able conduct in the chair during the past two years.

The following officers and council were elected for the ensuing year: Mr. Lewis F. Tonar, Licentiate R.I.B.A., president; Messrs. A. S. Parker, F.R.I.B.A., and Sampson Hill, vice-presidents; Mr. S. Dobell, hon. treasurer; Mr. Allan J. Pinn, A.R.I.B.A., hon. secretary; and Messrs. A. J. Cornelius, M.S.A.; R. A. Mill, Licentiate R.I.B.A.; Harold Watts, A.R.I.B.A.; and A. R. Holman, A.R.I.B.A., to fill the vacancies on the council of those retiring, as well as those remaining in office—viz., Messrs. C. Cheverton, M.S.A.; J. A. Lucas, F.R.I.B.A.; J. Jerman, F.R.I.B.A.; J. Crocker, F.R.I.B.A.; and C. Cole, M.S.A.

Votes of thanks were accorded to the hon. secretary, hon. treasurer, hon. auditor, and hon. librarian for their services. Subsequently the members lunched together, after which they inspected St. Nicholas Priory and some of the old houses and buildings in Exeter.

## CENTENTARY OF "LAXTON."

To signalise the one-hundredth anniversary of "Laxton's Builders' Price Book," the editor has introduced a new feature in the form of a "List of Specialities" of trademarks of materials and manufacture articles used by the building trades. It is claimed that "the list is given for the first time in this, or, indeed, as the publisher believe, in any similar book." There is no great novelty in the idea, however, as a similar but shorter list was given some four or five years ago in the "London Master Builders' Handbook." Such a list is undoubtedly very useful, as there is often great difficulty in tracing a trade name to its address. This difficulty most commonly arises where the proprietors have not persistently adopted the usual method of publicity, and it is questionable whether such lists do not rather tend to confirm this slackness. To prevent undue advantage being taken—in plain words, to avoid giving free advertisements—such lists should, in fairness, be restricted to advertisers. The "Laxton" list is very copious and will grow, and might then be kept within reasonable bounds by omitting proper names which are in themselves sufficient clues. It would be superfluous to praise the usefulness of the mass of practical information contained in so well-known a work of reference as "Laxton's" to which we wish at least another hundred years of prosperity.

"Laxton's Builders' Price Book for 1917." Containing about 73,000 Prices. One Hundredth Edition. London: Printed and published by Kelly's Directory Ltd., 182-4, High Holborn.



## RESTORATION OF THE CHAPEL OF ST. MARY MAGDALENE, RIPON.

St. Mary Magdalene's Chapel, long in a state of semi-ruin, has undergone reparation by order of the trustees of the hospital. In an interesting article contributed to the Yorkshire Archaeological Journal, by Mr. H. B. McColl, of Kirklington, it is stated that the chapel dates from the twelfth century, but has obviously been subjected to considerable alteration in the fifteenth. It is on plan a simple rectangle without chancel or aisles, and the twelfth century survivals consist of a south doorway with semi-circular arch, enriched with chevron and star ornament. The scalloped capitals of nook shafts can be distinguished on each side, but the shafts themselves are gone, and the inner order, or orders, of the doorway have been obscured by later treatment—that is to say, a pointed head has at some period been inserted inside the old arch. In the south wall there is a lancet without cusps, while the north and west walls have each a lancet foliated in the head. A piscina recessed at the usual place in the south wall has also a pointed head with pretty cusplings. These features and two pointed doorways in the north wall are all that have survived the fifteenth century alterations. At that period the walls were largely refaced on their exterior elevations with squared limestone from the Quarry Moor quarry, near Ripon, especially towards the eastern end; a parapet of the same material was erected all round the walls and a new roof of very low pitch was constructed. The bell-cot, which surmounts the western gable, seems to be of the same era. Larger windows were inserted on both the north and south sides, while the altar window to the east is of four lights, with tracery characteristic of the period in the head. All these windows were until recently blocked up for some distance of their height with coarse rubble and brickwork, but these have now been removed and the original windows freed from such encumbrances. A certain amount of underpinning and grouting of foundations has been necessary, and several new purlins in the roof have replaced those which were decayed. The internal faces of the walls have been stripped of plaster, revealing a small piece of coloured fresco work of a scroll design towards the eastern end of the north wall. Nearly opposite to this, on the south side, an early sculptured stone built into the twelfth century wall has been laid bare by the stripping of the plaster. The masonry at this end of the fabric is in fairly good repair, and some pointing of the joints is all that was necessary inside the building. But at the western part the walls were far less satisfactory, and it was necessary for their preservation to treat them with a rough coating of cement. The lead flashing of the roof has received attention, so as to render it watertight, and the brick floor has been put in order. All the plain diamond paned windows have been re-glazed, the original glass being used as far as possible.

The old altar stone with the five crosses is intact, and there is in the pavement in front of the altar some rather rough tessellated and mosaic work. The fifteenth century parclose screen has been re-erected in its appropriate position, though much of it is missing and has had to be supplied in substitute. Two pews, with well-carved poppy heads on their ends, are of the same period, and an iron-bound oak chest and a panelled pulpit are of the Jacobean era. The wooden bell is also an object of in-

terest. The repairs have been carried out in a most conservative manner under the direction of Mr. George Bland, architect, Harrogate, by Messrs. Coldbeck and Son, builders, of Ripon, who have been responsible for the whole of the work, except the leaded glazing, which is by Mr. Pape, of Leeds, well known for his restoration of many windows in York Minster.

## NEWS ITEMS.

### *Newcastle Infirmary Extension.*

The members of the Newcastle Corporation Town Moor and Parks Committee have confirmed the action taken at a special meeting in granting 14½ acres of land on the Town Moor for the purpose of extending the infirmary.

### *"King Richard's House," Scarborough.*

The house known as King Richard's House, facing the harbour at Scarborough, has been sold by auction for £740. King Richard, in 1483, resided there from June 30 to July 11. Most of the old features of the building are retained.

### *£100,000 for Dublin Housing.*

Sir Henry Robinson, Vice-President of the Irish Local Government Board, has informed a deputation that £100,000 would be made immediately available to enable the Dublin Corporation to carry out housing schemes in different parts of the city.

### *Housing in Lanarkshire.*

Sheriff Lee has granted an application by the District Committee of the Middle Ward of Lanark to supersede the enforcement of the order passed three years ago for the compulsory closing on sanitary grounds of 155 miners' houses at West Benhar. No other houses can be had in the district, and building is prohibited till after the war.

### *Memorial Window at Jesmond.*

A stained glass window placed in St. Barnabas Church, Jesmond, in memory of Sergeants W. Lumley and A. Ryott, Signaller S. N. Morison, Privates J. Clark and A. H. Fidler, Bombardier P. Hyslop, R. S. Thompson, R.N.D., and F. P. Ionn has been unveiled by Major T. C. Spring, General Staff, Tyne Garrison, and dedicated by the vicar of the parish (the Rev. A. Thomas) in the presence of a large congregation.

### *Waterproofing a Dock.*

We have received an account of one of the most interesting instances of the efficacy of waterproofed cement. The case in point is a dock "Somewhere in England." At high tide the sea water almost reaches the top of the retaining wall of the dock, and much trouble has been occasioned owing to water penetrating the wall. Many remedies were unsuccessfully adopted, and owing to an advertisement seen in the technical journals Pudloed cement was used with perfectly successful results.

### *Patriotic Builders.*

At a joint meeting of the Nottingham and District Building Trades Council and the Nottingham and District Association of Building Trades Employers, over which Mr. R. H. Swain presided, the men decided that for the week starting May 7 they would work one hour's overtime for five nights, and give the money earned to the funds of the Notts Patriotic Fair, and the employers agreed that they would add at least a minimum of 25 per

cent. to the earnings. This means an addition to the funds of about £600. At the outbreak of the war there were 5,000 members of the Building Trades Council in the Nottingham district, and of that number not less than 2,500 have joined the colours. It is hoped to extend the effort beyond the Nottingham area to the county, and should this prove successful, the amount raised will, it is confidently expected, be largely increased.

### *Mansfield Railway Opened.*

Mansfield railway, in Nottinghamshire, which has taken about seven years to construct, has been opened for passenger traffic. The railway has been built primarily to meet the needs of the rapidly developing coalfield in the Midlands, and large shafts have been sunk on the estates of the Duke of Portland and others. Travellers to and from this part of Nottinghamshire will also benefit by the new line, which shortens the Great Central Railway journey between London and Grimsby by about five miles.

### *Housing Committee for Manchester.*

Manchester City Council have adopted a proposal for the appointment of a special committee to inquire into the local housing conditions; to ascertain the causes of the present shortage of houses, past methods of providing houses, and the accommodation necessary adequately to ensure the comfort, health, and moral well-being of the community; and to make definite recommendations whereby a sufficient provision of suitable houses might be secured. It was stated that the position of the housing problem was serious in Manchester before the war; it had become intensified since, and it would be greatly aggravated when demobilisation came. In the six years ended in 1903 there were 20,157 houses erected in the city as at present constituted, in the next six years 18,570, and in six years ended in 1916 only 7,061. Each year after 1909 there had been a gradual diminution, until last year, instead of an average of 3,616, such as was experienced in the first six years referred to, only 119 new houses were erected.

St. Matthew's Church, Brixton, is to be reconstructed internally at a cost of £2,000 as a War memorial.

Mr. Frank A. Ellis, builders' merchant, Pendleton, has been elected chairman of the Manchester, Salford, and District Builders' Merchants' Association for the coming year.

It has been decided to form a Wallasey Memorial Trust, with the object of promoting a scheme for erecting on the promenade a memorial to Wallasey men fallen in the War.

## COMPETITION.

### *Derby New Union Infirmary.*

The Derby Board of Guardians have decided to throw open for local competition the appointment of architect for the new Union Infirmary, an undertaking stated to involve an expenditure of £50,000. Members of the profession who are rate-payers in the town are to be invited to submit plans. The House Committee had recommended a specific appointment, but there was a strong expression of opinion that it was in the public interest to promote the competitive spirit. The Clerk (Mr. R. Grantham) mentioned that it would cost between £200 and £300 to secure competitive plans.





## WAR BUILDINGS SECTION

### MILITARY HUTMENTS.

ONE of the most serious problems that confronted the military authorities on the outbreak of war was the provision of hutments for the great new armies that immediately sprang into being. Existing barrack accommodation was altogether insufficient, having been provided to meet the comparatively moderate requirements of that old regular peace-time army which played such a splendid part in stemming the German invasion of Northern France.

Accordingly, the construction of hutments on a vast scale was at once taken in hand. It was essential that the buildings should provide everything necessary for the comfort and convenience of the soldiers; also, though of a temporary character, they had to be of sufficiently stout construction to withstand a certain amount of hard usage. This was the problem that confronted British contractors. In the majority of cases it has been quite satisfactorily solved.

A particularly successful example is shown by the accompanying illustrations of a camp erected somewhere in the South of England by Messrs. Perry and Co. (Bow), Ltd. The buildings were erected on concrete footings, with hollow walls plastered inside and out with cement plaster on expanded metal lathing (supplied by the Expanded Metal Co., Ltd.). The framework for the walls was, in most cases, made up of timber sill-plates and wall-plates with



HUTMENTS AT A MILITARY CAMP: A TYPICAL EXAMPLE.





A Typical Dining Hut.



A Typical Sleeping Hut.

HUTMENTS AT A MILITARY CAMP.

timber studs at suitable spacings, the lathing being stapled to both sides of the studs to form a hollow frame. In some cases the inner face was formed of asbestos sheeting instead of metal lathing and cement plaster, and in some cases, also, where rough usage was to be expected, a dado of steel sheeting 4 ft. high was provided. The ceilings were mostly of asbestos sheeting, though in some cases expanded metal lathing and cement plaster were used. The roofs were formed of timber trusses and various kinds of roof covering. Buildings to the above general details are suitable for all sorts of camp purposes—regimental huts, living huts, and sleeping huts; buildings for stores, post offices, institutes, etc. The method of construction is simple, the materials required are low in cost, few in number, readily obtainable, and quickly and easily transported, and the buildings are dry and habitable immediately on completion. That they form remarkably comfortable shelters may be judged by the interior views shown on the preceding page, where a typical dining hut and a typical sleeping hut are illustrated. We hope to publish some further views, together with detail drawings, in a later issue.

### TROUGH LAVATORIES FOR WAR FACTORIES.

A recent article in the *Journal* on "Washing Facilities in Factories" emphasised the advantage of continuous trough lavatories as against separate basins. The latter were not, of course, necessarily meant to be condemned because isolated instances of their abuse can be found. Properly designed and fixed and adequately supervised, separate lavatory basins are just as efficient and suitable for workshop requirements as for schools or any other building where the number or class of users makes it essential for all such fixtures to be, as far as possible, proof against damage or deterioration through mischief, negligence, or other causes.

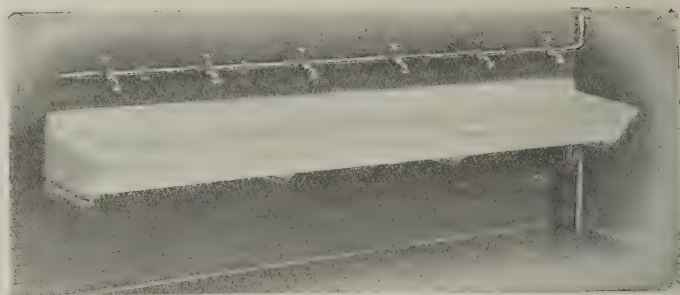
Sanitarians and manufacturers have successfully devoted their attention to this question, and there is no excuse nowadays for crazed or cracked bowls, filthy wooden or slate tops or casings, missing plugs, dirty back walls, inaccessible waste pipes, or other insanitary defects which are still too often to be met with, but should no longer be tolerated, as their effect is both

physically and morally degrading, and altogether deplorable.

Continuous trough lavatories, however, possess certain undoubted advantages, and are increasingly in demand, especially for large establishments. They are, in fact, the simplest conceivable form of lavatory for use by a number of persons at one time, are equally suitable for fixing (1) against a flat black wall, (2) in corner positions, or (3) independently for use on both sides, and are adaptable for any number of users.

The accompanying illustrations show the latest typical arrangements of patterns (1) and (3) respectively, the trough in each case being made of white glazed or enamelled heavy fireclay ware. Both the single and double troughs are shown in conjunction with a series of separate screw-down spray valves, but in many cases these are replaced by valveless spray nozzles, the whole series being opened or closed simultaneously by means of a control valve at one end of the range. Convenient soap dishes, made integral with the ware, are a special feature of these troughs, which are supplied from 4 ft. to 6 ft. long in one piece, either white or buff colour, with pedestals to match, or supported on strong cast-iron standards. The horizontal waste-pipe is optional, a good alternative arrangement consisting of a vertical down pipe from each section of trough, discharging into a floor channel.

We understand from Messrs. Pickup and Co., Ltd., of Howick, Lancs, the designers and manufacturers of these trough lavatories, that there has been an exceptional demand, both in England and France (especially during the war), for each of the patterns in munition works, where they are giving great satisfaction.



TROUGH LAVATORY FOR FIXING AGAINST A WALL.

### REINFORCED CONCRETE WHARVES AND JETTIES.\*

BY W. CLEAVER, M.Inst.C.E.

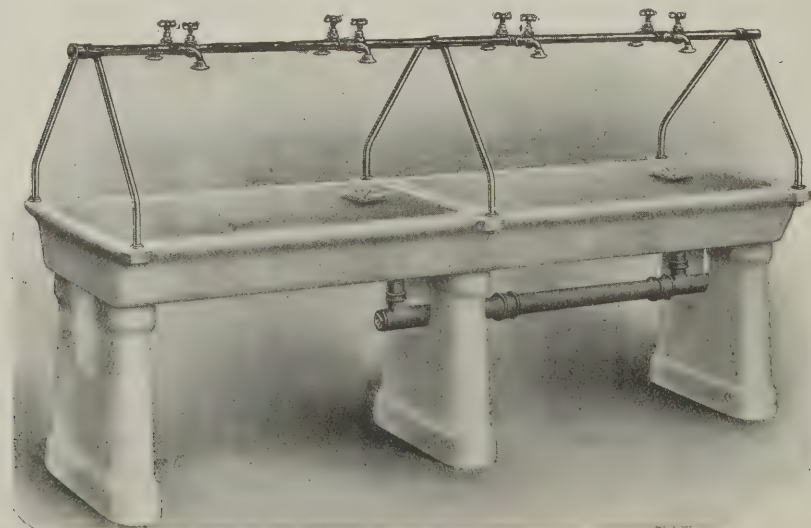
[War having played havoc with shipping interests, it may be confidently anticipated that the consequent reorganisation will be vast and thorough, and will involve the construction and extension of many wharves and jetties. The war interest in Mr. Cleaver's timely paper is therefore obvious.]

The great fault usually found with designers of wharves, jetties, etc., is that they do not take a broad enough view of the matter at the commencement, and thereby omit to take into account the combination of circumstances which, to a more or less extent, affect the design. For instance:—

(1) Vertical loads on the wharf, i.e., point loads or distributed loads, as the case may be. (2) Amount of impact stresses from ships when berthed against the face. (3) Pressure of filling at the base of the wharf, or thrust of natural ground according to circumstances. (4) Nature of strata for pile driving, etc., and particularly (4) The question of moorings; and (5) The general effect of the dredging on the design of the structure. One or other of these items is often unconsidered, and the item mostly overlooked is the question of (6) The method of dredging and its relationship to the general design of the work.

If some of the points mentioned, or similar ones, are overlooked in the case of well-established and understood methods of construction, such as timber wharves, etc., how much more easily are they overlooked when the work is constructed of reinforced concrete, and when the designer (although perhaps a specialist in reinforced concrete) may have very little knowledge of the many and varied conditions to be met with in the actual construction and use of such wharves, etc., such knowledge being absolutely essential, especially in work of this class.

The site may first of all be dry land, be dredged in its entirety, or it may be inundated to a depth of 5, 10, or more feet, but the operation would be almost the same in either case if the subsequent depth was to be such as required for a modern berth of, say, anything from 10 to 40 ft. depth of water. Except in the very few instances, the work must be carried out with a bucket dredger, of the hopper type or barge-loading variety, and the engineer's first trouble is due to the method of disposition and manipulation of the dredger with reference to the section desired. I insist that when dredging on near the actual line of wharf the dred



INDEPENDENT TROUGH LAVATORY.

\* Extracts from a paper read before the Concrete Institute.



must be placed at, or nearly at, right angles to the face-line. Even if the depth of dredging necessitates two or three cuts, it is much more feasible to so manipulate the dredger that the buckets will keep nearer to the line of sights, and the natural cut will more nearly approach the profile desired.

I advise that for modern requirements concrete piles, having a section less than 14 in. square or equivalent area, should never be used if over, say, 30 ft. long. For reinforced concrete piles, 14 in. square is a far more satisfactory standard section than 12 in. square, no matter what the work is like or intended for, as the general design of the structure should be based to a great extent on the section of pile decided on in the first place. As to whether the piles are square, round, or octagon, etc., is quite immaterial, but only that the gross sectional area shall be about 196 sq. in. in preference to 144 sq. in. The ratio of sectional area of steel to total sectional area of piles should not be more than about 36 to 1, which would give six super. inches of steel in a 14 in. square pile. This is for vertical reinforcement only, exclusive of any wire ties, binding, etc. I have always adopted one design of shoe for all circumstances, with very satisfactory results, as per the following particulars: "The shoe to be of uniform taper, the faces being at an angle of about 16 degrees to the centre-line of the pile, with nose slightly blunted, as shown on diagram [appended to specification, but not reproduced here]. The length of the cast-iron portion to be about half the total length of the taper, the area at top of the cast-iron point being about 40 per cent. of the sectional area of the pile in the case of the 14 in. square piles. The vertical rods to rest on the cast-iron point and to be kept in place by the recess, as shown. The straight portions of the wrought-iron arms to always be embedded in the concrete of the pile and not kept flush or project from the body." The author has always held the opinion that a helmet should in every instance be used when driving reinforced concrete piles, irrespective of whether the piles can stand the driving without same or not. A concrete pile should never be needlessly punished in the preliminary driving, as it is time enough for hard driving when the pile is almost home.

The present paper deals primarily with wharves for wet docks with a permanent water level, and for which bracings under water would present almost insuperable difficulties. One has, therefore, to depend almost entirely on the unsupported piles below water-line, and after trying various designs, the author has come to the conclusion that single-pile structures, that is, designs consisting of single independent pile supports throughout, are not very satisfactory. The author has reverted to the method of driving piles of normal section singly or in groups of two or more, according to circumstances, loading, etc., and then encase these with reinforced concrete cylinders and mass concrete hearting. The resulting column imposes such a large sectional area throughout its depth against shear that no fear need be entertained as to its capabilities to resist the impact even of the largest vessels. These columns, coupled with suitably designed beams, also enable the spans at the front of the wharf to be made longer than would be the case if single piles were used. The extra dead weight also adds materially to the rigidity of the wharf, a very important acquisition when the depth

is 30 ft. or over, and in addition the designer is able to arrange the fixing of the various mooring-rings, bollards, etc., in a much more efficient manner by attaching them at or near the cylinder columns.

For heavy structures subject to overturning moments, etc., such as cranes or gantries, and clipped to their permanent supports to prevent this, by far the best type of permanent way is, of course, the longitudinal timber method, with the timbers well secured into the beams of the wharf and the flange rails clipped (not spiked) to the timbers. For ordinary locomotive and waggon roads, however, I much prefer to use the ordinary cross-sleepered type of permanent way, ballasted in the usual manner, and I therefore design the decking so that the surface of the wharf constitutes really the equivalent of the ordinary formation level. To make this method a complete success, ample provision must be made in the decking for drainage by means of holes about  $2\frac{1}{2}$  in. to 3 in. diameter at suitable places, say in the centre of each bay.

If the exact positions of the rails are known beforehand, the beams can then be arranged under the actual rails in those positions, but the arrangement just mentioned is such that the position of the sidings can, within reasonable limits, be varied laterally (without in the least affecting the stability of the wharf) by taking advantage of the spreading or cushioning effect due to the ballast and sleepers.

All working faces of concrete wharves and such-like structures I protect with timber fendering, owing to the inevitability of same being damaged by abrasion, etc., and requiring renewal, and it is far easier to renew timber under such circumstances than concrete. For the same reason I always adopt timber piles, and also longitudinal caps, on the principle first of all (as regards using piles) that no timber fendering should ever be secured to the concrete below water-line, all fastenings being built into the superstructure only. This has the advantage of preventing any tearing or fracture of the concrete below water should the fendering happen to be torn bodily away by collision, etc., and it also avoids during construction any costly diving work in bolting up and similar items. The advantage in using longitudinal timber caps is: They provide a uniform sliding surface for ships when berthing alongside, whereas without caps portions of the ships, plate edges, etc., are liable to come into contact with the vertical arrises of the piles, with the consequent splitting and stripping; and secondly, they provide an additional width of a foot or so in whatever gangway is provided between cranes and face of wharf, coupled with a true uninterrupted face-line in lieu of the dangerous gaps between the piles when vertical timbers only are used.

If the strata on the site consist of good ground and the surface is above or near water-level, then I prefer to design the back of the wharf as a counterfort retaining wall. In the first place it is a cheaper mode of construction than piles, and owing to the extra superficial area offers more resistance to impact and lateral movement of the wharf than when same is wholly supported on piles. The condition of the site must of necessity govern the choice between wall and piles, but experience with both methods suggest that when the site permits the retaining wall is the best design.

I believe in employing specialists if the

work is of an extensive character. An engineer in usual practice has to have a very broad general knowledge of numerous subjects, and it is unreasonable to expect that he should be as conversant with any one particular subject as those who do nothing else all the year round but to specialise in that one branch. As to the general design of the wharves, etc., unquestionably the whole thing should be completed by the engineer, and the reinforced concrete specialists need not be consulted on the matter until the general design has been completed and the various loads, etc., decided on.

I believe in the wisdom of designing beams with single reinforcement in every possible instance as being by far the simplest to construct, cheapest as regards quantity of steel required (which is usually by far the most expensive item), and also as providing the greatest amount of concrete within economical ratios.

For bars of small section below  $\frac{1}{2}$ -in. diameter, no doubt it is necessary to specify them in 16ths, but above  $\frac{1}{2}$ -in. diameter I do not think it even economical in the long run, leaving out the question of convenience, to work to less divisions than  $\frac{1}{16}$ ths.

In the past, specialists have made a great mistake in designing beams with too little cover on the steel. If reasonable care is exercised to see that under no circumstances is there ever less cover of concrete at any place, top, bottom, or sides, than  $1\frac{1}{2}$  times the diameter of the respective bars, usually adopted in beams (when above a minimum size of, say,  $\frac{3}{4}$ -in. diam.), I do not think the trouble of peeling or scaling of the concrete off the bars would ever be experienced, assuming, of course, that the concrete is of the proper quality. Designers often serenely overlook the fact that the steel reinforcement when put together does not always lie in the strict plane they designed for it. A very important point also in my opinion is to standardise the sizes of beams in each job as far as possible and to provide for the variation in stresses entirely by varying the sectional area of steel in each beam within practicable and reasonable limits, of course.

To revert to general design and to details of fastenings for bollards, etc., I believe in avoiding, wherever possible, any lewis bolts, or such fastenings as have to be permanently fixed into the work. All bolts, etc., should be so designed and fixed as to be quite getatable, and so as to be easily changed if broken or deteriorated to such an extent as to require renewal, and I therefore always arrange for pieces of wrought-iron tubing with internal dimensions to suit the respective diameters of the bolts to be provided, and these are always built permanently into the work as it proceeds.

It may be well to mention that my primary reason for having taken up reinforced concrete in the first place was its undoubted fireproof quality. Oil tank steamers often use these wharves, and are always liable to drain their tanks into the dock, however strict the regulations may be, leaving a dangerous film on the surface of the water surrounding the wharf. I have known such a film catch fire with almost disastrous results. Under such circumstances the fireproof quality of the reinforced concrete wharves is not only highly important as regards the actual wharf itself as compared with, say, a timber one, but may also be the means of saving valuable material in adjacent warehouses, etc.



## MORE ABOUT ST. GEORGE'S HALL, LIVERPOOL.

Mr. William Scriven, in a letter to the editor of the "Liverpool Post," refers especially to the source of Elmes's inspiration, which may quite properly be regarded as the highest example of Greco-Roman monumental art. When Diocletian, in A.D. 305, abdicated the Imperial throne and retired to the scene of his humble origin at Salona (now Spalatro), in Dalmatia, exhausted by the anxieties and toils of government and warfare, he reared there "the vastest and noblest dwelling that ever arose at the bidding of a single man." It was the centre building (the baths) of this great example of Roman architecture at its culminating period that Elmes mentally reconstructed, and reproduced, in the peerless St. George's Hall.

Mr. Scriven recalls that he took occasion to allude to this some eight years ago, when a section of leading citizens proposed to lay destroying hands upon the simple grandeur of the podium at the south end of the hall, to replace it with a meretricious flight of steps from the roadway in connection with an absurd scheme for the erection of an equestrian statue of King Edward VII. And Mr. J. H. McGovern, architect of Liverpool, in one of several informative communications on that subject, contributed the interesting fact that the portion of the interior which constitutes the great Concert Hall is a reproduction, enlarged and improved upon in scale and design, of the central space in the Baths of the Emperor Caracalla at Rome (A.D. 211-217), the enlargement being a lengthening by two additional bays.

Elmes's genius and exhaustive study of the literature of his art, Mr. Scriven adds, seems to have awakened his inspiration without the usual aid of travel and observation.

An editorial note on this interesting observation appears on p. 184.

## INTERESTING DISCOVERIES AT DUNFERMLINE ABBEY.

Mr. P. Macgregor Chalmers, F.S.A., F.R.I.B.A., has made some interesting discoveries as the result of excavations which have recently been carried through in the floor of the nave of the old Abbey of Dunfermline, with a view to determining the site of the Holy Trinity Church, founded by Malcolm Canmore and his consort, the saintly Margaret. The discoveries which have been made are (the "Dundee Evening Telegraph" reports) of more than local importance. They solve problems which from time immemorial have puzzled ecclesiastical authorities, and they throw light on incidents in the early religious life of the community which ultimately led to the suppression of the simple Culdee Church of Scotland and the establishment of the Church of Rome as the national Church of the country.

Mr. Chalmers had a series of excavations carried through in the floor of the Abbey, and there he laid bare the fragments of a building which consisted of a nave, choir, semi-circular apse, and tower. The religious houses of the Culdees were of an extremely primitive type, and during the reign of Malcolm and Margaret, in the middle of the eleventh century, several of the structures were extended and made suitable to a more elaborate ritual. The fragments of building now exposed to view at Dunfermline at once convey the impression that the building had been a com-

posite one, and that the architect had linked on the "noble church" of Malcolm and Margaret to the primitive Culdee church of pre-historic times.

In the excavations the apse and the Rood Altar have been exposed to view, and recent visitors to Dunfermline have had the opportunity of looking upon the spot which Malcolm and Margaret, more than seven centuries ago, had selected as the royal sepulture of Scotland.

By voting £600 to defray the cost of the excavations and other work the Dunfermline Carnegie Trust has placed the people of Dunfermline and all students of ecclesiastical architecture under another debt of gratitude.

## OBITUARY.

The "Journal of the Society of Architects" records the deaths of the following members:

George Eaton Shore, of Crewe, who died on November 6 last, was the borough surveyor of that town. He joined the Society in 1892, and belonged also to the leading institutions connected with civil, mechanical, and sanitary engineering. A somewhat tragic coincidence in connection with Mr. Shore's death was that his son, Lieut. J. C. Shore, who was summoned from France to his father's bedside, was, on returning to the fighting line, killed in the same hour that his father passed away.

Arthur Thomas Gunnell Woods, of Brentwood, was one of the first members of the Society, having been elected in 1885. He took a personal interest in the Society's proceedings and encouraged his assistants to do so, thereby recruiting the Society through the examinations. The late member passed away on February 5, in his fifty-seventh year, after a short illness following a severe operation.

### Mr. George Took.

The death has occurred at Dereham of Mr. George Took, builder and contractor, who had an extensive business, which he conducted until six years ago, when he retired. He was seventy-three.

## THE SYDNEY CHAIR OF ARCHITECTURE.

Recording that the Chair of Architecture at the Sydney University has been endowed to the extent of £2,000 annually, our Australian contemporary "Building" comments that this is unique in the way of endowments. Law, Medicine, and the other endowed professions are supported from a general approbation. A special sum has been passed for Architecture.

The question has arisen as to the appointment of a professor. A temporary appointment is favoured in some quarters. It is maintained that the field will not be clear for the selection of a suitable professor until the end of the War. The Senate, however, believes that the man must make the position, and he should be there from the outset.

The estimated cost of the establishment of a professorial Chair of Architecture is: One professor, £1,100 per annum; one assistant, £250 per annum; apparatus, £650 per annum. Total, £2,000 per year. The course which is being considered by the Senate of the University is:

Examination or leaving certificate of high schools in the following subjects: Mathematics (trigonometry plane), algebra (bi-nomial theorem, geometry), English, French, or German, ancient and

modern history, elementary plane and solid geometry, elementary physics, elementary chemistry, elementary freehand and model drawing.

The subjects for the course in architecture should be: First Year.—Architectural drawing, freehand drawing, elements of architecture, elements of design, descriptive geometry, shades and shadows, perspective, physics (light, heat, electricity), inorganic chemistry (quantitative), mathematics, geology, construction.

Second Year.—Architectural design, freehand drawing (antique), water-colour drawing, architectural history, construction, mathematics, petrology.

Third Year.—Freehand drawing (life), architectural history, architectural design, historic ornament, construction (including graphic statics), water-colour, sanitary science, mathematics.

Fourth Year.—Design, freehand (life in colour), water-colour, pen and ink rendering, history of sculpture, history of painting, professional practice (including ethics, jurisprudence, and business), special lectures (including town planning).

It is not stated whether or not it is proposed to create a Faculty of Architecture, granting degrees, but this, of course, would be a logical and almost an essential development.

## ENQUIRIES ANSWERED.

### Charred Oak Beams: Reinstatement Question.

"DORSET" writes: "Recently a fire occurred in a small cottage, and the oak beam carrying the first-floor joists was charred to a depth of  $\frac{1}{2}$  in. under and each side of the beam. Please advise whether the owner can substantiate a claim for the reinstatement of this beam in his claim from the insurance company in which the property is insured; also, in the event of the reinstatement of the beam being disputed, if you are of opinion its reinstatement could be upheld, if litigation should arise, on account of the sectional area and strength by reason of the portion charred having diminished its strength."

—If there is a serious difference of opinion as to the extent of the reparation necessary, it is quite obvious that outside opinion, based on mere description of the damage, can be of but little value. The insurance people cannot be compelled to do more than can be proved to be necessary, and if they can show that the beam can be made safe and slightly by repairing it, a court of law would probably accept that view. To avoid litigation, why not try to persuade the insurance company to agree to the appointment of an independent arbitrator?

### Unearned Income Tax.

W. J. S. (Bristol) writes: "I shall be very glad if Mr. W. T. F. is correct in his letter on p. 44 of your issue for January 24, in giving the unearned income tax up to £500 at 2s. 3d. in the £. Isn't this an error? The rate is given elsewhere of 3s., which endorses my remembrance of the Budget speech of Chancellor of Exchequer. The 1915-16 Budget was 2s. 4 4-5d. up to £300 and 2s. 9 3-5d. up to £500, according to the same authority."

—Two shillings and threepence is the rate on earned income up to £500, and 3s. the rate on unearned income up to £500.

C. E. DILLON,

Acting Secretary, Income Tax Reclamation Association, Ltd.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MAY 2, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1165.

IN the annual report of the R.I.B.A., which is to be presented next Monday, there is little or nothing that has not been made familiar by speech or other announcement. Nor, indeed, would it be quite proper to criticise in the Press a report published in advance of its adoption. True, criticism in advance has the only chance of being immediately effective, but there is a natural feeling of delicacy about offering it from the outside—at all events, in war time. All that we are inclined to say at the moment is that the Institute's war activities seem, on this showing, to have been more energetic, more varied, and more effectual than its critics have been hitherto disposed to allow. That they might have been much more prolific of good results both for the Government and for architects is, we are convinced, less the fault of the Institute than the misfortune of the Government in failing to give sufficient attention to the offers of service put before it with an importunity that even now has met with only meagre success, but, it may be hoped, will be more amply rewarded when the Government realise more fully the quality and adaptability of the instrument placed ready to their hands. Perhaps it should have been thrust into their hands with a vigorous insistence that might excusably have shown more regard for the urgency of the situation than for the mere nuances and niceties of diplomacy.

Apprenticeship in the building trade, which is proving so tough a problem in this country, is giving considerable trouble in Australia. Builders there are apparently depending less on their own energies than on those of the Ministry of Labour for a solution. Nevertheless, the Sydney Master Builders' Association are taking a keen interest in the question, and in their annual report, which is now before us, they state the case in a way that shows a very clear appreciation of the special need of the building trade for some well-considered and workable system of producing a continuous and an adequate supply of competent craftsmen. "While the subject of apprenticeship may not show so much difficulty in industries that are settled and carried on from year to year under the same roof and under the same management," it is remarked in the report, "in trades like those connected with the building industry the subject is a more complex and difficult one. We have here an industry that fluctuates from time to time and, to some extent, from place to place, and one in which the man who to-day employs a large number of men may, next week or next month, have nothing to do, and his staff will be scattered among other employers. If he has been carrying out his obligations to the State in the matter of the training of youths, he will find himself with a number of apprentices on hand whom he is required to keep in employment, provide with instruction, and to whom he must pay wages." It is for these reasons that the problem of apprenticeship is more difficult for the building industry than for almost any other, and, consequently, special means for meeting these peculiar conditions must be devised. Some system of pooling obligations and resources seems to be indicated, and State-aided municipal technical schools, with compulsory attendance, will probably supply the ultimate solution. In the strenuous times that are coming, the country cannot afford the deplorable wastage that results from inadequate training in craftsmanship.

With respect to technical education and industrial efficiency, the presidential address delivered by Mr. Michael Longridge to the Institution of Mechanical Engineers embodies much wise counsel. America's enormous resources and her systematic preparation to capture the world's markets; Germany's organisation of her industrial resources in a way that we, "with our strongly individualistic proclivities," cannot hope to rival; and the growing richness of neutral nations at the expense of those which are fighting for independence—these are some of the factors that, whether operating singly or in combination, will make Great Britain's struggle for prosperity exceedingly arduous; but the more difficult it is, the more likely are we to rise to the occasion. It was at first the absence of foreign rivalry, and afterwards the fatuous contempt for it, that brought our industrial efficiency to a state so low as to put us at a serious disadvantage in the world's markets; but our chief mistake has been that we have set too low a value on technical education.

Matters having come to such a pass that "complete steam-engines built abroad were brought to England, erected, and set to work by foreign workmen. . . . in the very home of British steam-engine manufacture, in Lancashire itself," and British engineering firms whose names had been household words were being wound up, it at length became apparent that it was really in the foreign technical schools that we were being beaten. Then we began to wake up. In 1877 the City Companies appointed a committee to draw up a national scheme of technical education, and, as a result, the City and Guilds Central College was established. A royal commission on the question reported in 1884, the National Association for the Promotion of Technical Education was formed in 1887; and in 1890 the State transferred the control of technical education from the School Boards to the local authorities, and gave half the revenue from whisky towards its support. There can be but little doubt that much of this money has been wasted, mainly through the diffusion of energies that ought to be concentrated; or that our foreign rivals lay out their money to much greater advantage; and among the reforms suggested by Mr. Longridge are two that we have frequently advocated—namely, general instruction in the schools in working hours, instead of expecting the lads to spend their leisure at evening classes, and the raising of technical colleges to university rank. Mr. Longridge's wise and timely address should be in the hands of all who are interested in the nation's welfare.

We have pleasure in commending to special attention a request by the R.I.B.A. Board of Architectural Education for the names and addresses of any architects who may be prisoners in Germany, the Board desiring to offer them facilities for study, and even for doing work that may be accepted in lieu of some parts of the ordinary examinations. An important meeting of representatives of many professional and educational bodies was held recently at the Board of Education at the instance of the Prisoners of War Book Scheme (Educational) for the purpose of discussing generally the matter of education and examination in the prison camps, and it became clear that very much may be done if information can be obtained



from prisoners as to the books and apparatus that they may require. At Ruhleben alone, classes are being carried on for about 1,400 students by about 200 professors and teachers, and examinations have been actually held in the camp, and the results accepted by the Board of Trade and the University of London. The secretary of the R.I.B.A., 9, Conduit Street, W.1, will be glad to receive information that will enable him to communicate with the architect prisoners of war, who, one can well believe, would welcome this relief as a veritable godsend. Not only would it redeem captivity from much of its dreary monotony, but, by giving the captives profitable occupation, it would convert them into "prisoners of hope." The Board of Architectural Education is to be congratulated on its endeavour to give effect to a particularly happy and humane thought.

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Intense love of buildings that are venerable for the art that is in them, or for the characteristics they exemplify, rather than for their mere age, is a passion in which the architect, of all men, may indulge disinterestedly; and in his case any tendency to sentimentality is corrected by a professional intuition akin to that of the anatomist. He admires rationally, and keeps his more emotional elements well in check. When, therefore, architectural opinion is unanimous against the demolition of some fine old building it is safe to assume that there is adequate occasion for protest. This is the case with respect to the wholesale demolitions in Old Queen Street, Westminster, and to the threatened destruction of some of the fine old houses in Queen Anne's Gate. Old Queen Street was a compendium of late seventeenth-century domestic work. No single street so racy of its period exists in London, except Queen Anne's Gate, which is adjacent to it. At all events, we have already realised the irreparable loss of a score or so of houses that, collectively, were matchless for their old-world charm. People went out of their way to feast their eyes on the mellow brickwork, the nicely adjusted string-courses, the sedate doorways, with their exquisitely traceried fanlights, and a dozen other charms that express the form and spirit of an age of which we seem to be in danger of losing all the more notable survivals.

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When shall we emerge from mediævalism? A writer in the current issue of the "Athenæum" observes that "since the older universities happen to contain a number of examples of domestic Gothic, the new non-residential universities are mostly in that style (or in the late Sir Alfred Waterhouse's improvement upon it); and we have laboratories crowded into inconvenient gables and Gothic façades clapped on to weaving sheds." It is as if scientific chemistry had not yet superseded alchemy! Sooner or later, science laboratories will be fatal to "domestic Gothic," for quite obviously these two incompatibles cannot continue to cohabit. This putting of new wine into old bottles brings into sharp collision the old spirit and the new, and indicates with satirical emphasis the utter hopelessness of reconciling ancient Gothic to modern needs. It is not so much the inconvenience as the violent incongruity that shocks one's sense of fitness; and, on the whole, it would be hard to discover a more striking illustration of the obsolescence of Gothic than that of bringing it into actual contact with a modern science laboratory. The force of contrast could no farther go. Not that Gothic stands for the purely spiritual, and science for what is intensely and exclusively materialistic. Either assumption would require considerable qualification; only the broad fact is, that the one thing is mainly concerned with the emotions, the other with the intellect, and design in building is subject to the same qualifications.

Referring to a note on p. 184 of our issue for April 18, we have received from Mr. David Home Morton, M.Inst.C.E., of Glasgow, the following communication: "I was interested in your paragraph relative to St. George's Hall, Liverpool, particularly in relation to visual memory and dream design. The need which the designer has for the qualities to which you refer is not so generally obvious as it seems to those who have the qualities. The enclosed pamphlet, being an address delivered some years ago, I have marked at one or two points bearing upon, and confirming, your statements." The pamphlet Mr. Morton so kindly sends reproduces his presidential address to the Glasgow Association of Students (Institution of Civil Engineers), session 1911-12. In it there occurs this passage: "Let the young mathematician remember that his training simply puts him in possession of a few valuable mental tools, which will enable him to do certain portions of his work more accurately, more reliably, and more quickly than can be done by the man who has not had his advantages. If the designer's forte is chiefly in analytical work, he can only be the valued assistant of the gifted constructor, of the man who can conjure mental pictures of his completed work before a stone is laid or a beam placed; who has an intuitive perception of the direction and value of strain and stress, and whose delight is to do, to build up, to see his work grow, rather than to worry about the absolute accuracy of investigations which he knows to have been founded on incomplete and approximate data. It delights him not to have the young mathematician present him with results extended to four decimal places, when he knows that the data may not be correct within five per cent."

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A further psychical and perhaps subconscious phenomenon is noticed by Mr. Morton a few pages later: "That so many beautiful examples and relics of the older civilisation should have survived through these dark ages, for our instruction and admiration, is abundant proof of the brilliant position which had been achieved. The mind of the architect is saturated with the older examples; at will, he can form mental pictures of what he would like to produce, out of his store he can draw almost without limit, and he displays his own individuality largely by the harmonious arrangement of components and grouping of details which have been designed by his predecessors, or suggested by the study of their work." As we said on the occasion which has drawn forth Mr. Morton's interesting communication, this power of visualisation varies with the person; some persons possess it without being clearly conscious of it, while others may have it in such excess as to create illusions of apparitions—a morbid condition in which a man "sees what isn't there." It is a power which is not wholly denied to mathematicians, some of whom, we have been credibly informed, are greatly aided (or, as some say, hindered) by the mental appearance of figures in various vivid colours, each digit wearing its own peculiar hue of green, blue, red, etc. Newspaper correspondence has brought out the fact that these phenomena are much more common than is generally supposed. Vivid dreams while we are asleep or slumbering are, however, no rarity: it would be difficult to discover a person who has not experienced them. As, therefore, all possess the brain-cells from which these living pictures are projected, all, it would seem, could use them in waking hours, if only they could catch the trick of it. Psychologists might usefully address themselves to the investigation of these phenomena. It would be profitable to the architect, for example, to know exactly how to develop and control them; but with regard to day-dreams that is a secret that is much more recondite than the influence of lobster-salad on nightmare.



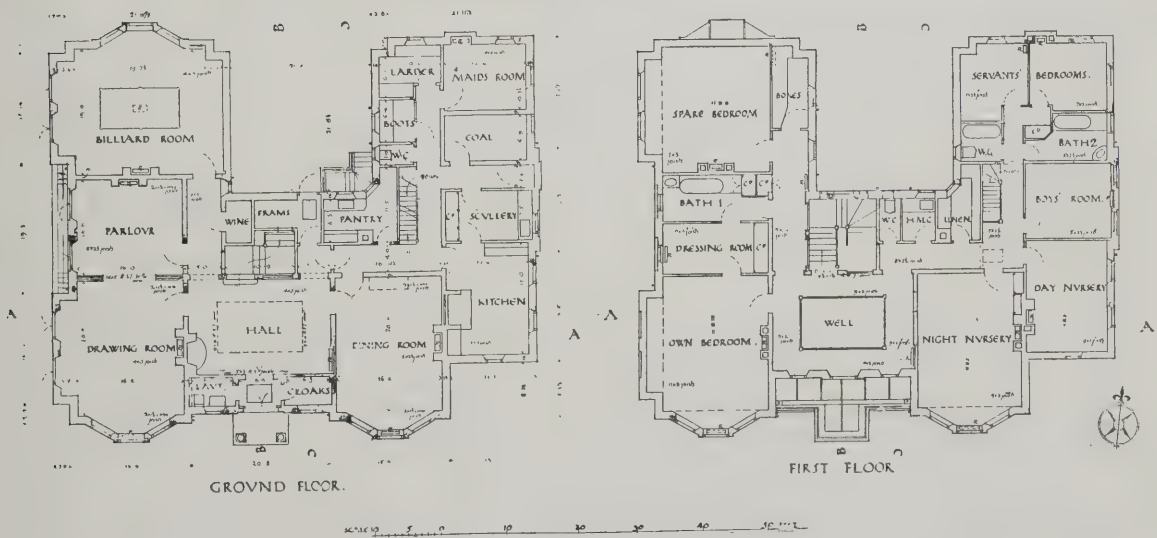


CURRENT ARCHITECTURE (SERIES IV.). XX.—DILKE HOUSE, MALET STREET, LONDON, W.C.

W. E. VERNON CROMPTON, F.R.I.B.A. (LANDER, BEDELLS AND CROMPTON), ARCHITECT.





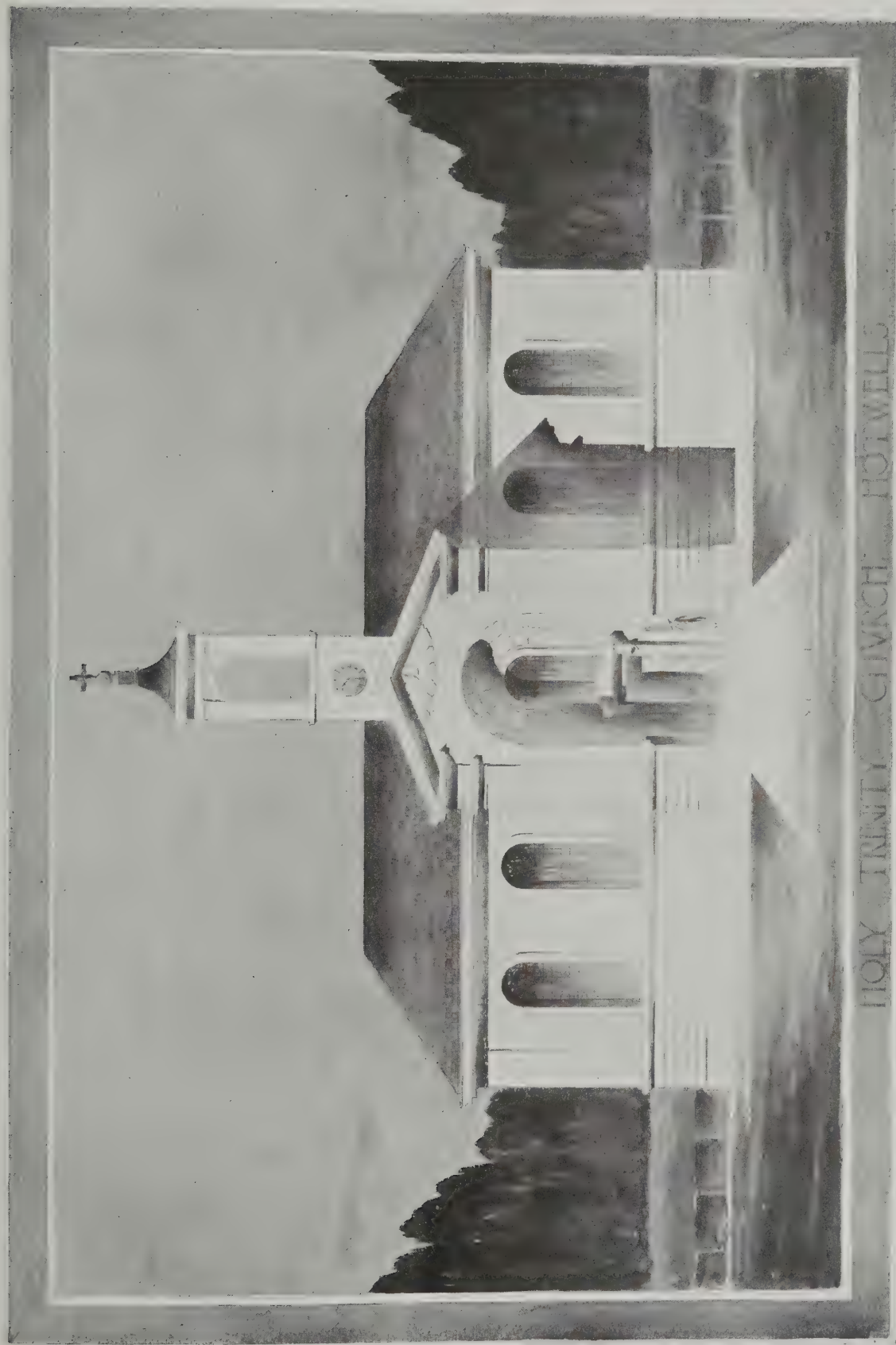


MODERN DOMESTIC ARCHITECTURE (SERIES III.) IV.—HOUSE AT HANGER HILL, EALING.

W. E. VERNON CROMPTON, F.R.I.B.A. (LANDER, BEDELLS AND CROMPTON), ARCHITECT.





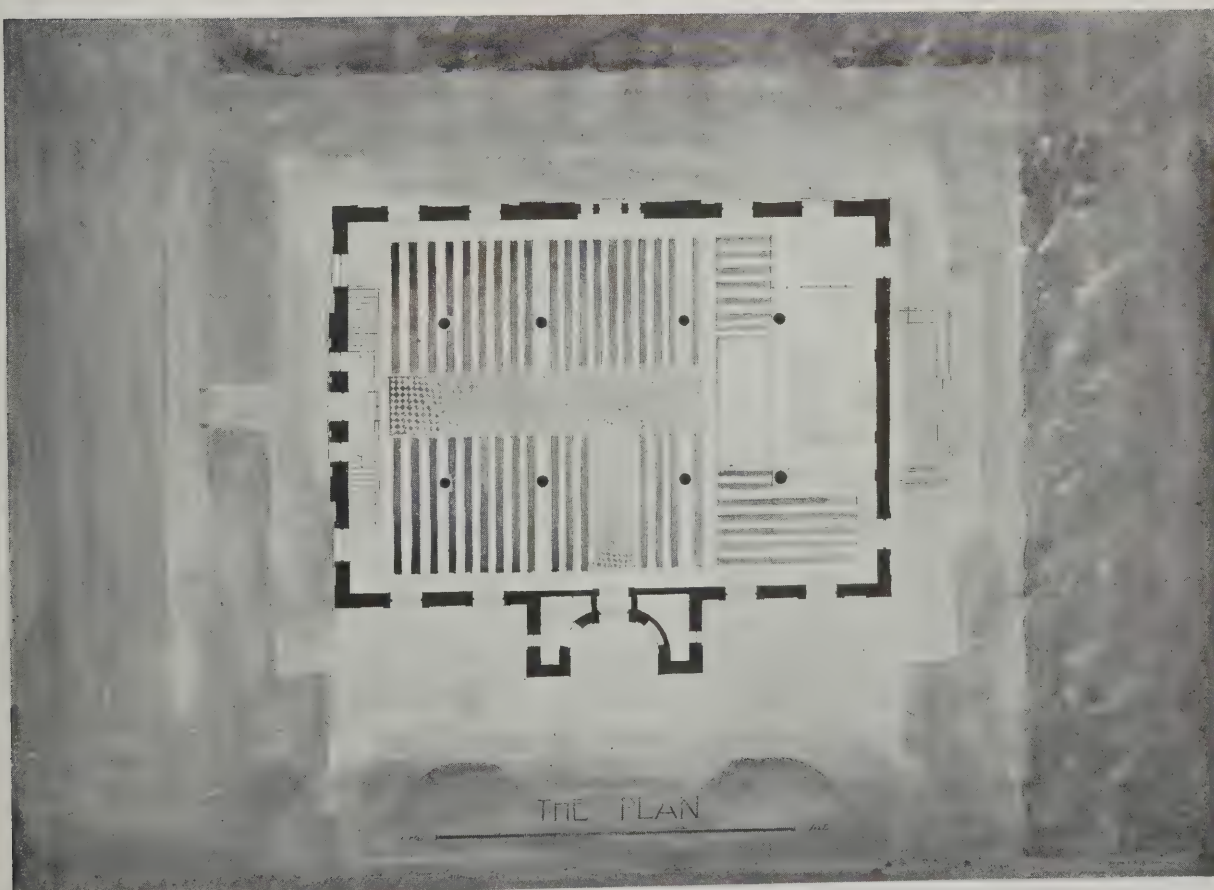


STUDENTS' DRAWINGS (SERIES II.). XLIII.—HOLY TRINITY CHURCH, HOTWELLS, BRISTOL.

BY GORDON HEMM.





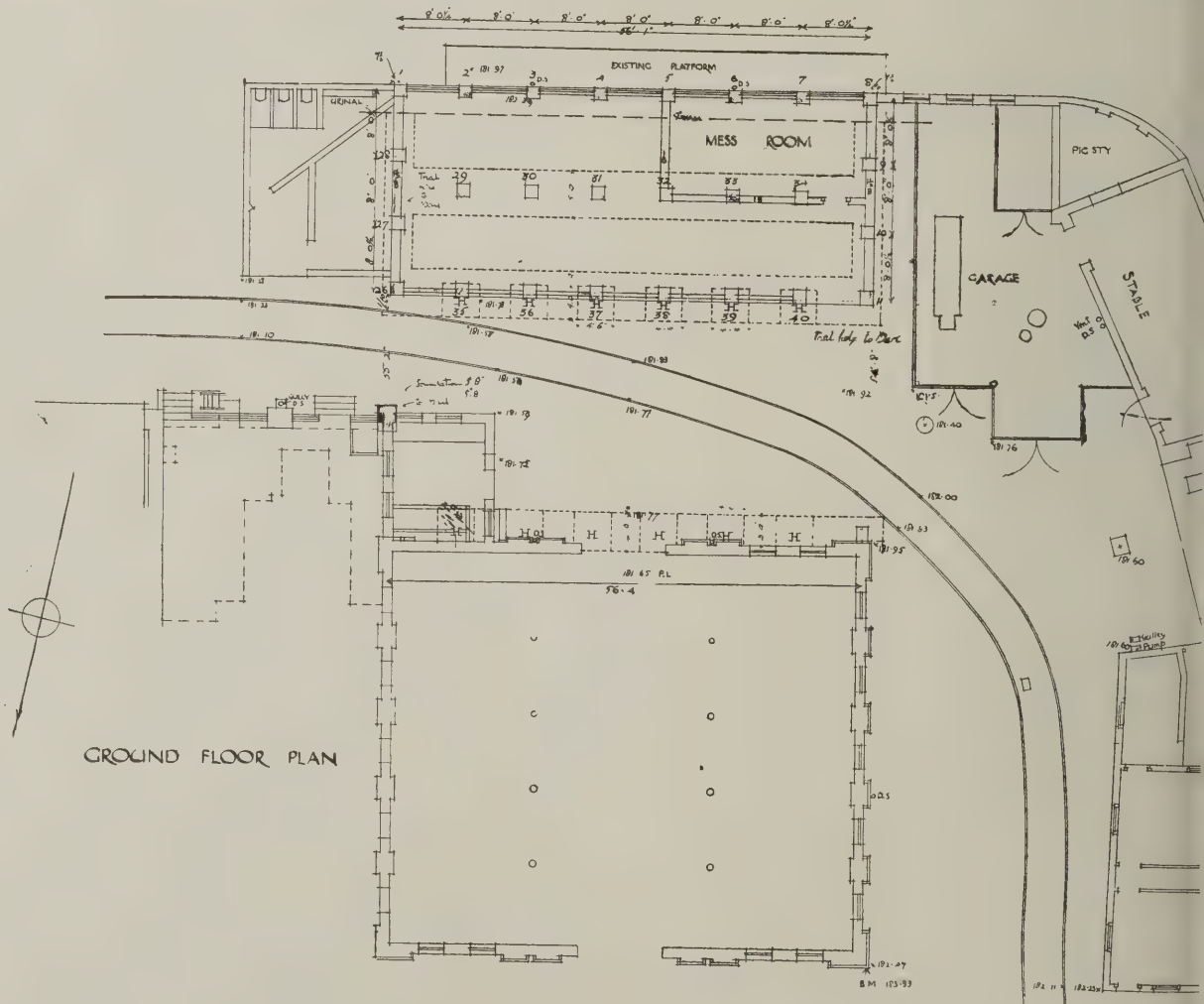
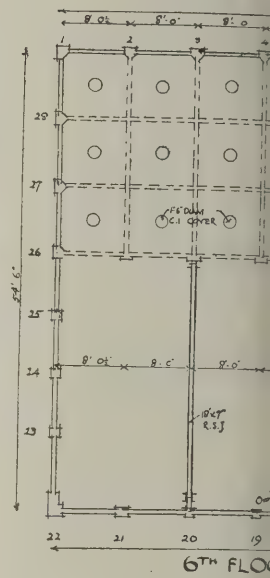
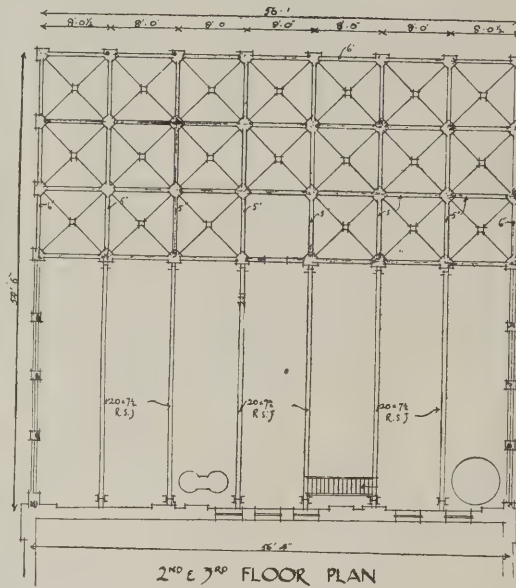
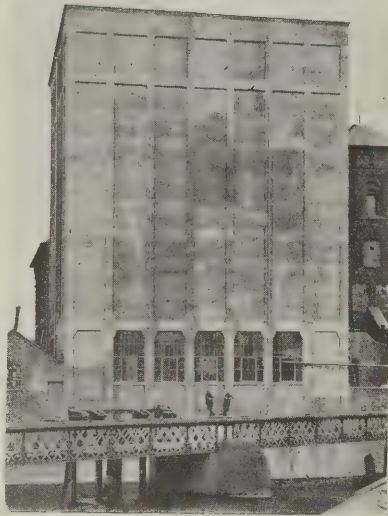


STUDENTS' DRAWINGS (SERIES II.). XLIV.—HOLY TRINITY CHURCH, HOTWELLS, BRISTOL.  
BY GORDON HEMM.



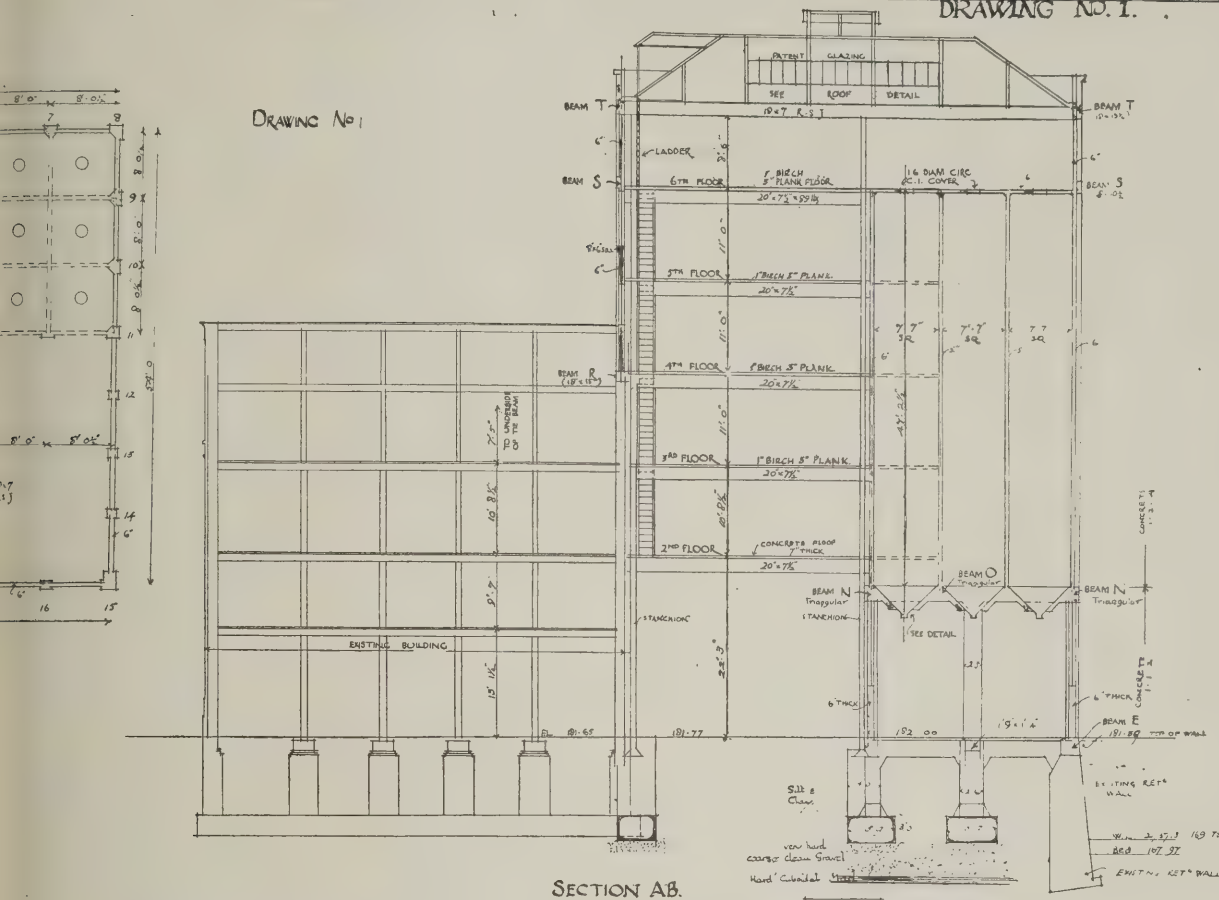






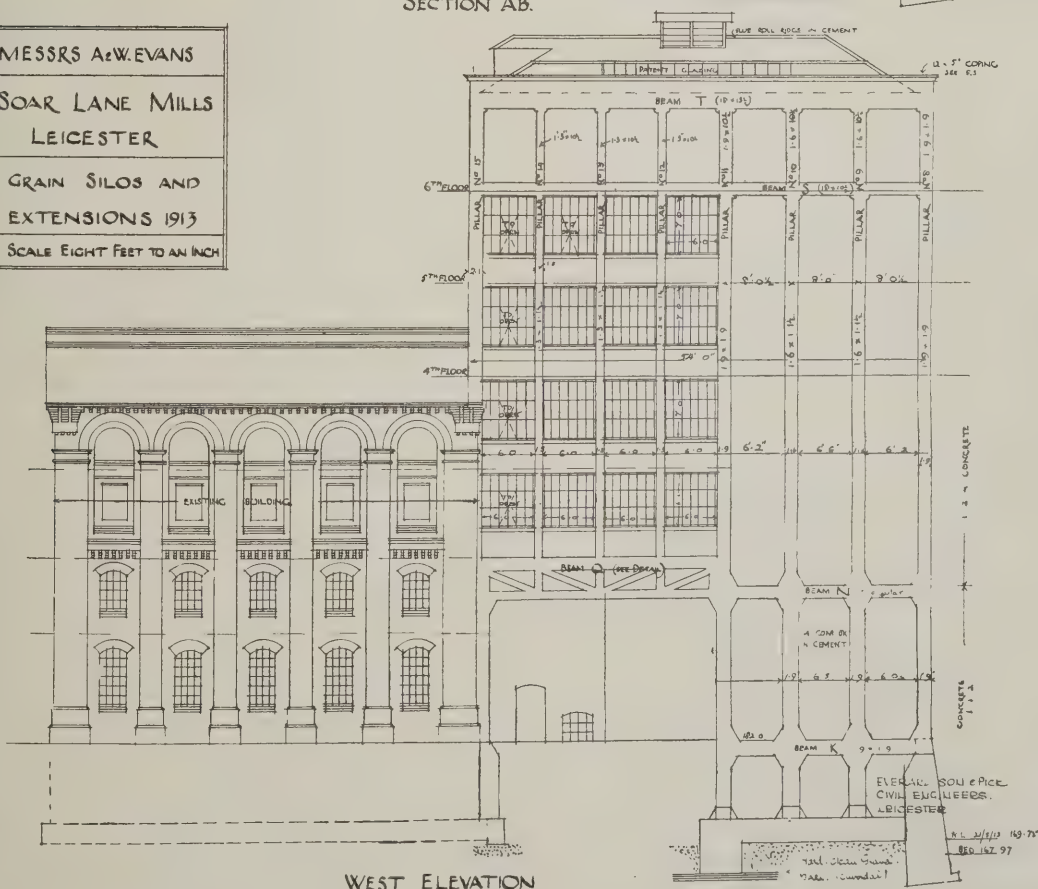


DRAWING No 1



SECTION AB.

MESSRS A & W. EVANS  
SOAR LANE MILLS  
LEICESTER  
GRAIN SILOS AND  
EXTENSIONS 1913  
SCALE EIGHT FEET TO AN INCH



LO AND MILL EXTENSION, SOAR LANE, LEICESTER.  
ARCHITECTS.

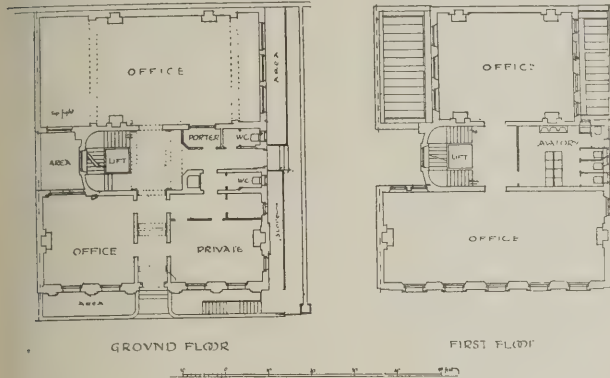




## THE PLATES.

### *Dilke House, Malet Street, W.C.*

THIS building, erected for the National Amalgamated Union of Shop Assistants, Warehousemen, and Clerks, has been designed so that one or two storeys may be added at a future date if required. This explanation may disarm the criticism that the main cornice is somewhat heavy for the design as at present carried out. The public entrance is in the centre of the façade, the entrance for the employees being at the side. There is a board room on the top



floor, having a lantern light and decorative plaster treatment. The walls of the entrance hall and staircase up to the level of the first floor are treated with pilasters and simple panels in Sicilian marble, finely sifted, and white cement, and are half polished. Mr. W. E. Vernon Crompton, F.R.I.B.A. (Messrs. Lander, Bedells, and Crompton), of John Street, Bedford Row, W.C., was the architect, and the builder was Mr. W. J. Maddison, of Clarkson Street, Canning Town, E.

### *House at Hanger Hill, Ealing.*

This house, recently built, is situated on the top of Hanger Hill, Ealing. The architects were instructed that a white house was desired, with as little roof visible as possible. They accordingly advised a painted cement exterior, but the idea was not approved, and ultimately Suffolk bricks were used. The work is designed on late eighteenth-century lines. Mr. W. E. Vernon Crompton, F.R.I.B.A. (Messrs. Lander, Bedells, and Crompton), of John Street, Bedford Row, W.C., was the architect, and the builder was Mr. W. J. Dickens, of The Broadway, Ealing, W.

### *Holy Trinity Church, Hotwells, Bristol.*

This church was erected in the early part of last century from the designs of C. R. Cockerell. Our reproductions are made from a fine set of drawings by Mr. Gordon Hemm, of Liverpool University School of Architecture.

### *Grain Silo and Mill Extension, Leicester.*

A description of this building is given in the article published on page 214.

## ARCHITECTS AND NATIONAL SERVICE

WITH reference to the appeal recently issued through the Press to architects who sign the National Service Form N.S.V. 1, the R.I.B.A. Architects' War Committee understands that the forms filled in by professional men who make their status clear under the heading "(e) Occupation" upon the form, are referred to a special branch of the Service with its headquarters

in London and branches in the provinces. In the case of such professional volunteers, unless they specially state under heading "(k)" that they are willing to do other than professional work, they will not be liable to take up manual labour or other service of a non-professional character. Should any demand of such a nature be made in error, the volunteer is at liberty to require that his form be referred to the nearest Professional Classes Branch office, where the mistake would be rectified.

## A.A. MEMORIAL TO THE LATE LIEUTENANT STANHOPE FORBES.

A GRACEFUL and touching memorial of the late Lieutenant Stanhope Forbes, who was killed in action last September, has been presented to his father, Mr. Stanhope Forbes, R.A., by the Council of the Architectural Association. When war broke out Mr. Stanhope Forbes, jun., left the A.A. schools and joined the army, and was therefore unable to take up the Third Year Travelling Studentship which he had won. As a memento of these circumstances, the Council have presented to Mr. Stanhope Forbes, R.A., the very beautiful little stained-glass panel, which, by courtesy of the editor of the "A.A. Journal," is here illustrated. In acknowledging the gift, Mr. Stanhope Forbes, R.A., has written to the Council as follows: "Yesterday afternoon Mr. Mackenzie called bringing with him the very beautiful little stained-glass window which the Architectural Association have so very kindly presented to me. Words fail me to express how very deeply grateful I am for this charming thought on the part of your Society. I beg you will convey to the members my very sincere thanks and assure them how much I appreciate their gift." It was indeed a charming thought, and the artist (Mr. J. Dudley Forsyth) has interpreted it in the spirit in which it was conceived.



MEMORIAL TO THE LATE LIEUT. STANHOPE FORBES.



## R.I.B.A. ANNUAL REPORT.

THE Report of the R.I.B.A. Council for the Official Year 1916-17 will be presented at the annual general meeting of the Royal Institute of British Architects, on Monday, May 17. It records that since the publication of the last annual report the Council have held fourteen meetings, and that fourteen committees appointed by the Council have met and reported from time to time on the matters referred to them.

The present subscribing membership comprises 842 Fellows, 1,656 Associates, and 48 Hon. Associates—a total of 2,546. During the official year since the last annual general meeting 19 Fellows and 23 Associates have been elected, as against 33 Fellows and 44 Associates the previous year. There are now 1,890 Licentiates on the roll, as against 1,919 last year. Since the publication of the last annual report eleven Licentiates have passed the examination qualifying for election to the Fellowship, and nine of these have been duly elected as Fellows.

*Examinations.*

Under the new Regulations the Preliminary Examination qualifying for registration as Probationer has ceased to be held, and candidates for Probationership are required to furnish to the Council satisfactory evidence of their attainments before being passed for registration. From November, 1915, when the last Preliminary Examination was held, until March, 1917, fifty candidates have satisfied the requirements, and have been registered as Probationers. The large majority of Probationers and Students of the Institute being on military service, it was decided to hold the Intermediate and Final Examinations once only during the official year—viz., in June—and the autumn examinations were dropped. Seventeen students only have been added to the Register during the year, and thirteen candidates have passed the Examination qualifying for Associateship. On the recommendation of the Board of Architectural Education, it has been decided to hold the Final and Special Examinations in India provided satisfactory arrangements can be made. The first examination would be held in Bombay. The Statutory Examination qualifying for candidature as District Surveyor in London, or as Building Surveyor under Local Authorities, was held in October, and resulted in the passing of two out of the three candidates who presented themselves for examination.

*Effects of the War.*

The work of the Royal Institute continues to be seriously affected by the war. The programme of sessional papers remains suspended, only business of a routine and uncontroversial nature has been transacted at the general meetings, and the prize competitions for the year have again been postponed. Members who have joined the Forces since the outbreak of war now number 72 Fellows, 513 Associates, 312 Licentiates, and 293 Students.

Altogether, the Institute has lost in the war 1 Hon. Fellow, 1 Hon. Associate, 4 Fellows, 38 Associates, 9 Licentiates, and 23 Students. Since the last annual meeting the secretary and the chief clerk have been called up for the army. The Council are extending to them the consideration that has been accorded to other members of the staff, and are supplementing their military pay in order that they may suffer no diminution of income whilst on service.

In a letter to Mr. Lloyd George when War Minister, the President drew attention to the fact that many highly trained young architects were being wasted in the ranks of ordinary line regiments, and sug-

gested that they should be appointed to Cadet Corps with a view to being granted commissions in the Royal Engineers. Numerous architects have since obtained commissions in this way.

As a result of a personal protest to the War Office against the claims of architects being ignored for such appointments as supervisors of buildings for army purposes in France, the President was asked to nominate five architects for such posts. This was done, and it is understood that their work has been highly satisfactory. The President is endeavouring, in conjunction with the Surveyors' Institution, to get substantive rank for professional men employed in this and similar work, and the War Office has the matter under consideration.

Application having been made to the Institute by the War Office for men able to speak French to arrange for billeting in connection with the British Forces in France, the requirement was made known, and architects found capable of filling the position were appointed.

The President has been in communication with the War Office with the object of securing for architects appointments in connection with billeting troops in England, and it is understood that architects qualified for this kind of work will be appointed as occasions offer.

In connection with the Order in Council made last July imposing restrictions upon private building, the President has accepted an honorary position at the Ministry of Munitions for the purpose of carrying out a system of inspection to ensure that buildings in course of erection are not stopped without regard for their protection and security. The staff of inspectors is composed of architects accustomed to deal with buildings of every kind, and care is taken to administer the Order with scrupulous fairness.

Endeavour has been made by the President to secure the appointment of architects as inspectors of labour at munition factories in course of erection. He has also been instrumental in securing for owners of Controlled Establishment Canteens the right of employing their own architects for the preparation of plans.

*War Employment for Architects.*

The Institute has supported during the year the various organisations which it was instrumental in promoting, and on which it is represented, with the object of assisting architects whose practices have come to a standstill in consequence of the war. This has been effected either by finding them positions in Government and other offices, or by granting them financial aid. The hospitality of the Institute Galleries has been afforded to the Civic Survey of Greater London, where work has been in progress since the beginning of the scheme, now nearly two years ago. This has provided employment for 80 architects, and for 60 of these better positions have been found in Government Departments and elsewhere. The Civic Surveys of South Lancashire and South Yorkshire have also fulfilled the same purpose as that of London, and have found employment for some 35 architects. Acting in conjunction with the Architects' War Committee and its Sub-Committee, the Professional Employment Committee, a large number of other positions have been found for architects with private firms as well as in the following Government Departments: The Board of Trade, Board of Inland Revenue, Inland Revenue Land Valuation Department, Office of Works, Ministry of Munitions (Enfield Lock Powder Factory, Department of Explosives, Central Clearing House, Trench Warfare Supply Department, etc.). Admiralty (London and Sheerness), Aeronautics, War Office (Wool-



with Arsenal, C.R.E. Office, Aldershot, etc.), Central Control (Liquor Traffic) Board. The expense of carrying out the work of the various Committees has been largely borne by the Institute.

Representations have been made to the Reconstruction Committee as to the desirability of passing plans for asylums and other buildings during the present period of slackness in architectural work in order that the plans may be prepared at once in readiness for use at the restoration of peace. The Reconstruction Committee are in communication with the Board of Control on the subject, and favourable consideration is anticipated.

#### *Architects and National Service.*

A deputation arranged by the R.I.B.A. and the Architects' War Committee, and consisting of representatives of the R.I.B.A. and its allied societies, the Architectural Association, the Society of Architects, and unattached architects, waited upon Mr. Neville Chamberlain, Director-General of National Service, to urge in connection with the National Service scheme the utilisation of architects by the State for the special services for which their training has fitted them. The deputation was very sympathetically received, and Mr. Chamberlain approved a proposal put before him that the profession should appoint a committee to confer with him from time to time and suggest the kind of work that architects were qualified to undertake. An Advisory Council representative of the whole profession was at once formed, and an appeal has been published urging architects to sign the National Service form and send it to the R.I.B.A. or to the Allied Society of their district, in order that the forms may be all sent in together as a united offer from the whole profession. The Advisory Council has also in preparation a list of the services in which architects are likely to be useful, which is to be sent to Mr. Chamberlain with a suggestion that his Department should indicate the nature of the vacancies it is desired to fill.

#### *Informal Conferences.*

The Council, adopting a suggestion made by Professor Lethaby at the opening meeting of the Session, organised a series of informal conferences at the Institute on matters not only of architectural, but of general public interest. Six meetings have been held, and two more are arranged for.

#### *Conditions of Contract Revision.*

The Conditions of Contract Revision Committee, who have held 38 meetings, have had under review a large number of documents and legal decisions relating to the subject referred to them, and considerable progress has been made with the work of revision. The Committee hope shortly to be in a position to present a report to the Council.

#### *Industrial and Scientific Research.*

The Privy Council Committee for Industrial and Scientific Research having invited the Institute to send representatives to meet Sir William McCormick and other members of the Government Committee, a Sub-Committee of the Science Standing Committee met the Government Committee, and suggested a number of subjects suitable for research in connection with building materials. The scope of the Institute representatives' relations with the Government Committee has since been largely extended and promises to have substantial results. The Sub-Committee have now been given the powers of a full Committee to act as they deem expedient in their negotiations with the Government Committee.

#### *Science Teaching.*

The Council have given their support to a memorandum drawn up by the British Science Guild

for presentation to the Government, urging that the State should take immediate measures to promote the more general and effective teaching of Science in Public Schools and other Secondary Schools in preparation for more advanced teaching in the Universities and Technical Colleges, and to co-ordinate the work of the science laboratories of such institutions with the activities of progressive industry and commerce.

#### *Timber for Building Purposes.*

The Cabinet Committee on Afforestation invited the Institute to give evidence as to the best kinds of trees to plant to produce suitable timber for building purposes. Messrs. Sarles-Wood, Vernon Crompton, and Digby Solomon were appointed for the purpose, and at the Cabinet Committee's request have drawn up and submitted to them a report upon the subject.

#### *Amendment of the London Building Acts.*

The Art Standing Committee having submitted to the Council in June, 1915, a report containing various suggestions for the amendment of the London Building Acts, the Council referred the report to the Practice and Science Standing Committees for their comments, and on the recommendation of the former a Special Committee has now been appointed to deal with the whole question in order to be ready to meet any proposals that the London County Council may bring forward when further amendment of the Acts is under consideration.

#### *Australian Parliament House Competition.*

The Government of the Commonwealth of Australia having decided upon the resuscitation of the competition for the Federal Parliament House at Canberra, which had been postponed at the outbreak of war, the Council, on the appeal of the Royal Victorian Institute of Architects, and supported by the principal French architectural societies, strongly protested to the Commonwealth Government against the competition being proceeded with at the present time, pointing out that all the architects of Great Britain and the Allied nations who were of military age, and large numbers also of the architects of the Overseas Dominions, were serving with the Forces and unable to compete—hence the competition would be practically confined to neutral countries, and would be in no sense international as originally intended. The Commonwealth Government declined at first to postpone the competition, but a further remonstrance was made by the Council through the High Commissioner in London, and eventually a cablegram was received stating that it had been indefinitely postponed.

#### *Ottawa Government Buildings Competition.*

A complaint reached the Institute that in the competition for the New Departmental and Courts Buildings at Ottawa the Dominion Government were not fulfilling the obligations to competitors as set out in the general conditions for competition designs, the terms of which had been considered and approved by the Institute. The Council in consultation with the Competitions Committee addressed a letter of protest to the Deputy Minister of Public Works, Ottawa. The Minister, in reply, made concessions which the Council consider will afford a satisfactory temporary settlement, and it is hoped that other proposals made by the Council in the interests of fairness to the competitors will be adopted by the Dominion Government and be carried into effect when the final stages of the competition are proceeded with after the war.

[The report recalls also the action taken by the Institute with reference to the Charing Cross Bridge question, particulars of which are already familiar to our readers.]



## SOCIETIES AND INSTITUTIONS.

*Liverpool Architectural Society.*

The annual general meeting of this Society was held on Monday last, April 30, at two o'clock p.m., at the Society's rooms, 13, Harrington Street, Liverpool. In view of the War conditions, the Council had not nominated any additional members for election on the Council. They recommended the re-election of the following existing Council and officers: President, Mr. E. Percy Hinde, F.R.I.B.A.; vice-presidents, Mr. G. Hastwell Grayson, M.A., F.R.I.B.A., and Mr. T. T. Rees, F.R.I.B.A., F.S.I.; hon. secretary, Mr. Richard Holt, A.A. Unofficial members of Council: Fellows, Messrs. H. M. Appleyard, W. Glen Dobie, A.R.I.B.A., T. Edgar Eccles, F.R.I.B.A., C. W. Harris, F.R.I.B.A., P. C. Thicknesse, F.R.I.B.A., A. Thornely, F.R.I.B.A., W. E. Willink, M.A., F.R.I.B.A.; Associates, Messrs. L. P. Abercrombie, M.A., A.R.I.B.A., S. McLaughlan. Hon. auditors, Mr. F. G. Briggs, F.R.I.B.A., Fellow, and Mr. L. B. Budden, M.A., A.R.I.B.A., Associate.

In the annual report of the Council, which was presented at this meeting, it is stated that the present membership of the Society consists of 59 Fellows and 41 Associates, a total of 100. There are also 3 Hon. Fellows, 9 Hon. Associates, and 5 Students.

The work of the Council has been largely associated with matters arising out of the War or which may affect the interests of the profession in the "after the War" period. Lieut.-Colonel S. B. Morter, Captain M. Honan (now reported missing), Lieut. J. F. Barnish, and Captain A. K. Sykes have been mentioned in despatches. Second-Lieut. G. H. H. Sutton has been awarded the Military Cross.

The demands of the Ministry of Munitions in respect of building material and labour resulted in the issue of an order under the Defence of the Realm Act requiring the cessation of all building work over £500 in value, unless under licence granted by the Ministry. Further restrictions have now been imposed, and all building work except such as may be recognised as being of immediate value to the State has now ceased. A conference of representatives of the Architectural Societies of Manchester, Sheffield, Birmingham, and Liverpool was held at Manchester on March 31 for the purpose of considering proposals which were submitted by the Town Planning and Housing Council with regard to the employment of architects on the Government's scheme of housing necessitated by the stoppage of building work during the War. The President, Mr. T. T. Rees, and Professor Abercrombie attended on behalf of the Liverpool Society.

A suggestion made by the President that the Midland and Northern Architectural Societies should form a joint association or council, having its centre in Manchester, for the purpose of coming to agreement and of taking common action on any professional questions, more especially those affecting provincial interests, met with much approval, and an opening meeting called by the presidents of the Manchester, Birmingham, and Liverpool Societies has been held at Manchester.

To assist in creating a greater interest among the general public on the subject of War memorials, their design and suitability for the situations in which they may be placed, the Council undertook to arrange for the holding in Liverpool of

the Exhibition of Designs for War Memorials promoted by the Civic Arts Association of London. The exhibition, which was held at Liberty Buildings in October last, was enlarged by the addition of exhibits by the members of the Society, the School of Architecture, and by various craftsmen. No charge was made for admission, the expenses being covered by voluntary donations.

Further communications have passed with the R.I.B.A. respecting the suggestion that the Society, through its Town Planning Committee, should attend inquiries and actively take up the matter of town planning schemes with the local authorities concerned. The Council holds a somewhat different view, and does not approve of strictly professional services involving a large amount of time and thought being voluntarily offered on public work. The Council again urged the Institute to impress upon the Local Government Board that an architect should be professionally employed on the early stages of all town planning schemes, more especially those submitted by the smaller urban authorities.

A report of the work of the Architects' War Committee of the Royal Institute of British Architects gave rise to severe criticisms, and strong expressions of opinion from this and other provincial societies were laid before the Council of the Institute. It was felt that the policy of the Institute had resulted in a complete absence of any appreciation by the Government authorities of the services which architects by their special training were qualified to offer to the State.

The revision of the Liverpool building regulations is now under the consideration of a special sub-committee of the Health Committee, and the Council has received an invitation from the chairman of the sub-committee to send a deputation of three or four Society members to meet the sub-committee and confer with them with such proposals as the Society may think desirable. The Council has appointed a committee which has devoted much time to the subject and will shortly arrange a meeting with the special sub-committee of the Health Committee.

*Architects' Benevolent Society.*

The sixty-seventh annual general meeting of the Architects' Benevolent Society was held in the rooms of the Royal Institute of British Architects on Thursday, April 12. Mr. Ernest Newton, the president of the Society, occupied the chair, and was supported by numerous members.

The hon. secretary (Mr. Percivall Currey) read the annual report, in which it is stated that the Council have continued to administer the funds entrusted to their charge by the Government Committee on the Prevention and Relief of Distress by means of the Civic Surveys, as well as those collected by the Architects' War Committee. In the former case the sum of £6,500 has been received from the National Relief Fund for the payment of salaries of the workers in the three areas of the surveys, viz., Greater London, South Lancashire, and South Yorkshire. In many instances the Society has, through the various committees with which it co-operates, been able to find more remunerative positions for the workers.

The funds which have been administered on behalf of the Architects' War Committee, to which contributions have been received from time to time from the National Relief Fund, have been disbursed either in the payment of employment in connection with schemes promoted by the Professional Employment Com-

mittee or in special grants in cases in which this form of assistance was considered to be the more helpful. The sum of £2,071 9s. 10d. has been distributed in this way. The loan fund of the Architects' War Committee, although small, has also helped to relieve a few members of the profession from financial difficulties caused by the War. The general work of the Society has, meanwhile, proceeded as usual. The subscriptions received amount to £631 12s., as compared with £636 received in the previous year, while £313 7s. has been received in donations. The donations received during the year together with the balance carried over from the capital account, enabled the Society to invest £800 in the War Loan.

The chairman, in moving the adoption of this report, remarked upon the fact that the largest bequests and donations during the history of the Society have been received from those who have been most familiar with its sphere of operations.

Sir John Burnet moved the election of Mr. Ernest Newton as president for the coming year, which was carried unanimously. Mr. Reginald St. A. Roumie was elected vice-president, and the Council as follows: Messrs. Walter Spiers, Percy B. Tubbs, W. Henry Whit, Sir John J. Burnet, William Woodward, Arthur Ashbridge, A. Saxon Snell, Lew Solomon, J. T. Cackett, Felix Clay, Edwin T. Hall, William Grellier, Henry Lovegrove, and Edwin J. Sadgrove (representative of the Society of Architects).

Votes of thanks were accorded to Mr. V. Hilton Nash (hon. treasurer), Mr. Percivall Currey (hon. secretary), Mr. Herbert Shepherd and Mr. Osborn Hills (hon. auditors), and to Mr. Ernest Newton for presiding.

*The Northern Architectural Association.*

The annual report of the Council of the Northern Architectural Association (Newcastle) states that sixty-eight members are now on service, and that five have been killed. The members' roll for 1916 contains 176 names—73 members, 73 Associates, and 30 Students—compared with 192 last year. The council have offered their congratulations to Major J. V. Douglas, R.E., member, on his receiving the D.S.O. and the Serbian Order of the White Eagle; to Staff-Captain D. Hill on his promotion to the rank of brigadier-major; and to Captain R. Mauchlen as Lieut. W. N. J. Moscrop, on their receiving the Military Cross. With reference to the Glover Bequest and the appointment of new trustees, the report states that a special general meeting was held on November 15, and a resolution was passed assenting to the new rules in connection with the bequest. Owing to the war, and the absence of so many members, no outdoor meetings were held during 1916, and the usual lectures at winter meetings were abandoned. Acting on the recommendation of the Finance Committee, the Council had purchased £500 worth of 5 per cent. War Loan stock with the Glover Bequest money, £350 of which was from capital previously on deposit at the bank and £150 from income from investments. The Council are offering no prizes to students during the ensuing session.

*Waterproofing a Heating Chamber.*

The heating chamber to the Grimsby and District Hospital having given much trouble on account of flooding after heavy rains, the difficulty has been overcome by a Pudloed cement rendering to floor and walls.





## WAR BUILDINGS SECTION

### WAR WORK AND THE FEDERATION OF BRITISH INDUSTRIES.

A DEPUTATION of manufacturing associations which waited on the Government, at the House of Commons, on March 13, made quite clear the intense desire of manufacturers to yield the utmost service to their country, and to do it with a degree of economy which could not be attained by the Government without the knowledge and experience which industrial experts are prepared to place at their disposal.

Dr. Addison, the Minister of Munitions, received the deputation, and Mr. George Terrell, M.P., of the British Manufacturers' Association, in introducing it, said that the deputation of manufacturing associations comprised the Federation of British Industries, which has 347 members, and includes an important number of associations, each having their own membership: the Central Council Association of Controlled Firms, with a membership of 3,500 manufacturing firms; the Employers' Parliamentary Association, which has a membership of 2,500 manufacturing firms; and the British Manufacturers' Association, which has a membership of about 700 manufacturing firms. There is a total represented in these organisations of something like 8,000 or 9,000 manufacturing firms. The amount of the capital involved is something over two thousand million pounds, and the number of hands employed runs into several millions. The object was not to find fault or to complain of mistakes, but to put the facts before the Government showing the mistakes which have occurred in the past, and to submit practical suggestions for their avoidance in the future. "We know," he said, "we have to make sacrifices. We are not grumbling. We are prepared to make any sacrifice necessary for the common cause. But there are many sacrifices which we are called upon to make which are of no good to the country, which are simply a waste of time and waste of money, and it is to prevent the recurrence of waste of that kind when everyone is struggling to do his best in

the common cause, that we come to you and ask for your help, for it really amounts to that. We suggest that if employers were taken into confidence and consulted in regard to the steps the Government consider it necessary to take we should probably be able to meet the requirements of the Government with the minimum interference of output. What the deputation asked was that manufacturers, through their organisations, should be consulted in regard to any new orders or instructions which might be considered necessary by the Government for the regulation of labour, raw material, and manufactures. It meant simply that the Government should notify any changes or rules or regulations which they might desire to pass to the Federation of British Industries. The Federation would make inquiries for the whole trade of the country, find out which were the industries really affected, and get first-hand information which they would submit to the Government for their consideration. They asked to be allowed to gather the information and to submit it for consideration before any definite action was taken of the kind which he had indicated in the cases to which he had referred. He ventured to think that if the Government could see its way to adopt the suggestions a great deal of time would be saved, a great deal of waste would be avoided, and the employers would be able to show that they could render the Government very important and valuable work in the responsible duties they had to carry out.

Sir Vincent Caillard (Vickers, Ltd.) cited numerous instances in which closer co-ordination between the manufacturer and the Government would have had the effect of stimulating the output and removing friction.

Mr. A. E. Hurst (the Employers' Parliamentary Association), representing the malleable iron trade, said that if the official organisations of the iron trades had been consulted they would have been of great value in carrying out the requirements of

the Government, while at the same time the industries would have been kept alive for the benefit of the country.

Dr. Addison, in reply, admitted that they had been compelled to interfere with trade all over the country. With regard to copper, aluminium, lead, steel, and so on, it was essential to preserve sufficient working stock in this country to make munitions. It was quite evident that the restrictions which had been imposed would, unfortunately, in a good many cases, inflict serious harm on the trade, and the Government were only too glad to welcome any suggestion whereby that hardship could be minimised as much as possible. But they should not deceive themselves on this point. These things could not be done without causing harm. We should never get out of these difficulties so long as the War lasted, but what they wanted were businesslike arrangements to deal with them. As to the general ground of complaint, that the Departments did not take employers into consultation often enough, they knew how urgent the business was, and, having regard to these times of emergency, he did not think that the deputation's suggestions as they stood really would quite work. The Ministry of Munitions, and he was quite sure his colleagues at the War Office, would be glad to consult with a standing committee of, say, three or four persons whom they could trust to speak in the name of those whom they represented when matters arose affecting new Orders. Recently he had appointed a small committee of business men whose business it was to advise the Priority Section of the Ministry of Munitions with respect to all orders, and so on, so as to occasion the minimum of hardship. He would be very glad to afford that collection of employers' organisations the opportunity of appointing an additional one or two members.

Mr. Neville Chamberlain (Director of National Service) and Sir William Peat (of the Federation of British Industries) having spoken, the deputation withdrew.



## GRAIN SILO AND MILL EXTENSION, LEICESTER.

The silo and mill extension at Leicester shown by the accompanying drawings have a storage capacity of about 9,500 quarters, in addition to space for discharging and mixing machinery. The dimensions of the block are 56 ft. by 55 ft. on plan, by 96 ft. from foundations to roof, the southern half being devoted to bins and the remainder to the mill extension.

The somewhat restricted area of the site added interest to the problem of weight distribution. The north wall of the block is carried on an old building, the south wall on a river retaining wall, and the intervening space on the ground floor is partly occupied by an indispensable siding.

Fortunately, a good "bottom" was secured at a moderate depth, the alluvial gravels at 12 ft., overlying the hard red marl of the middle Keuper at 16 ft., forming a secure basis for the superincumbent weight.

### The Silo.

The silo, with a capacity of about 6,000 quarters, consists of twenty-one bins (one occupied by elevators), each 7 ft. 7 in. square and 50 ft. deep, the bottoms tapering at an angle of 45 degrees to a 6-in. cast-iron outlet controlled by a gate. Grain mixing machinery, pneumatic plant for discharging wheat from barge or truck, and a mess-room occupy the space below the bins. The incoming wheat is lifted by elevators to the top of the building, is automatically weighed, and is then distributed by shoots connected to a horizontal conveyor to the various bins. The thickness of the bin walls, based on Professor Airy's formula, is 5 in., doubly reinforced, the external walls for protective purposes being made 1 in. thicker.

Half-inch horizontals spaced from 6 in. to 11 in. centres and  $\frac{3}{4}$ -in. verticals, 12-in. centres, form the reinforcement to the internal walls of the bins, hoop-iron clips being freely employed to ensure correct horizontal spacing.

The shuttering shown in the accompanying sketch was of the portable type. It consisted of strongly framed boxes diagonally halved and 6 ft. 6 in. high, thus allowing the bins to be completed in eight lifts. An overlap of 6 in. was given to secure alignment. The outside walls were shuttered externally in the usual way. By this means a comparatively smooth interior, essential to a grain silo, was obtained. The exterior was brushed over with a thick cement grout. The walls remain dry and the wheat keeps in excellent condition under this protective coat.

### The Mill Extension.

The northern portion of the block consists of six floors, one floor only and the external walls being in reinforced concrete. The remaining floors were required in wood, and this led to the adoption of a framed steel construction for their support, the weight being carried independently of both the silos and the existing mill.

The floor coverings are formed with 3-in. planks, 8-ft. span covered with 1-in. sawn birch boarding laid diagonally. Birch was adopted because of its excellent wearing qualities.

A light slated steel roof enclosed within a parapet wall surmounts the whole structure; the gutters are substantially made in cast-iron and afford walking space for access to the roof.

Steel casements, each having a portion to open on a vertical axis to avoid dust troubles, give a well-lighted interior. The

sills and copings are of indurated concrete. A cast-iron spiral sack shoot, and a continuous band passenger lift form important accessories to the mill.

### Materials.

The cement accorded with the B.S. revised specification; Leicestershire granite varying from  $\frac{3}{4}$  in. to  $\frac{1}{4}$  in. formed the aggregate; and the sand was obtained from Leighton Buzzard.

The concrete throughout (with minor exceptions) was mixed in the proportion of 1—2—4, the equivalent of a cubic foot of cement (which was added by weight) having been considered as 90 lb.

All the reinforcement consisted of round

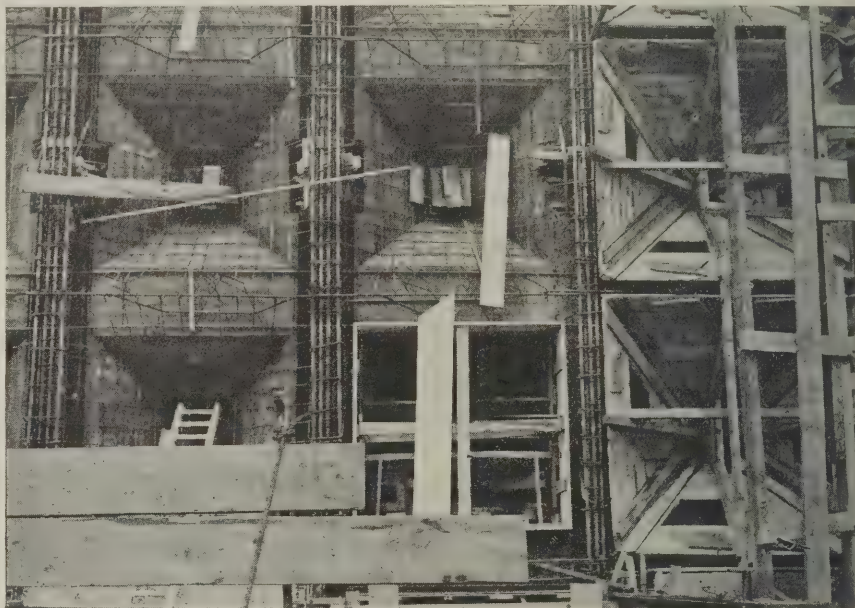
bars of mild steel, in accordance with the British Standard Specification No. 15. Special attention was paid to hooking and the connections at inter-sections.

### Plant.

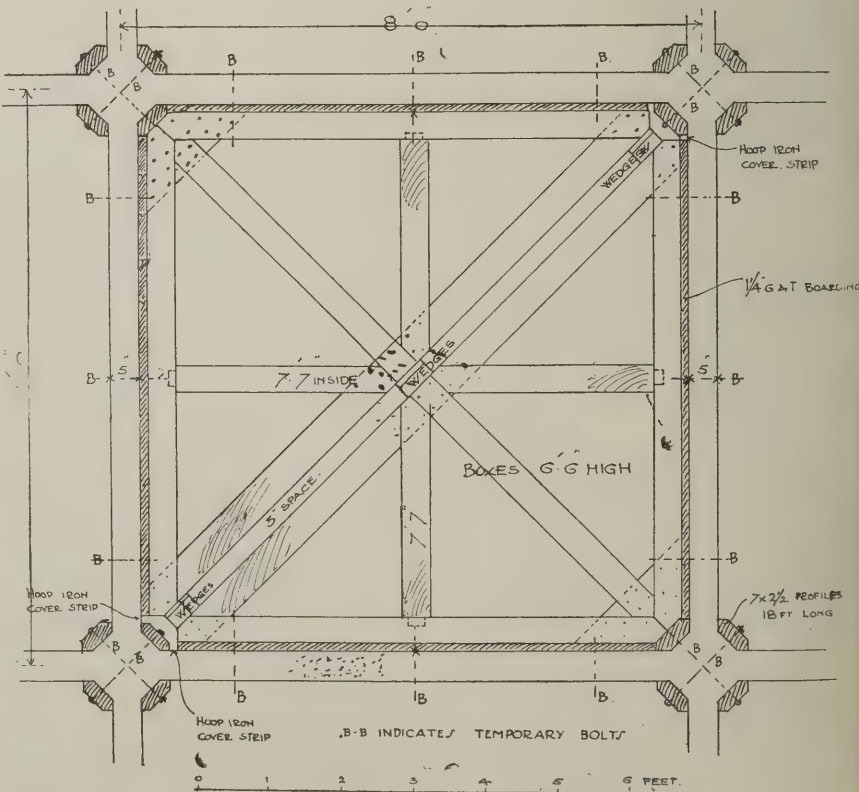
A satisfactory mixer of the continuous type, a barrow hoist electrically driven rod benders, and a small crane for handling the "boxes," complete the inventory of the contractor's plant.

### Calculations and Tests.

All calculations, drawings, and quantities were made and prepared by the engineers on the basis of the L.C.C. regulations for reinforced concrete and steel construction.



Reinforcement to Hoppers.



Portable Box Shuttering to Bins.



The bulk of the steel bars were tested at the makers', and frequent tests of the cement, steel, and concrete were made by the Cement Users' Testing Association.

The work was successfully carried out under the direct superintendence of the architects by Messrs. Wm. Moss and Sons, Ltd., of Loughborough, whose tender amounted to £6,124. Mr. R. Maples acted as foreman of works. The engineers were Messrs. Everard, Son and Pick (civil engineers and architects), of Leicester.

## THE R.I.B.A. RECORD OF HONOUR.

The forty-second list in the R.I.B.A. Record of Honour is published in the current issue of the Journal of the Institute:—

### Fallen in the War.

Papworth, Second Lieut. Alfred Wyatt (A.), Royal Engineers. Reported killed in list published April 11.

Pywell, Private William Jackson (A.), Honourable Artillery Company. Killed in action in France on February 8. Aged thirty-two. He was the eldest son of Councillor W. Pywell (F.), chairman of the Hanwell District Council.

Private Pywell, who was elected an Associate of the Institute in 1911, was engaged at the Office of Works, and volunteered for service early in 1915. To mark their appreciation of his patriotic spirit his colleagues at the Office of Works presented him with a valuable luminous wrist watch, which he carried with him to the Front.

### Members' Sons Killed.

Gleave, Captain Harold Mason, Sherwood Foresters. Killed (struck by a shell whilst returning from action) in France on March 6. He was the only son of Mr. William R. Gleave (A.), of Nottingham.

The following were the three sons of Mr. George J. Frisch, of Littlehampton, for thirty-five years an Associate of the Institute, and recently resigned:—

Frisch, Second Lieut. Charles, Gurkha Rifles. Killed in action, Mesopotamia, April 17, 1916.

Frisch, Lance-Corporal Geoffrey, Royal Sussex. Missing somewhere in France, presumed to be dead, January 25, 1915.

Frisch, Second Lieut. Maurice, Rifle Brigade. Missing somewhere in France, presumed to be dead. August 25, 1916.

### Distinguished Service.

Russell, Second Lieut. Robert Tor, I.A.R.O., attached Gurkha Rifles, and serving in Mesopotamia, has been awarded the D.S.O. He was wounded at the crossing of the Tigris at Shumran, but is now discharged from hospital and returned to duty. Second Lieut. Russell is son of Mr. S. Bridgman Russell (F.).

Rogers, Second Lieut. William Herbert, R.E., mentioned in dispatches for distinguished service ("Times," March 31).

### Serving With the Forces.

The following is the forty-second list of members, Licentiates, and Students R.I.B.A. serving with the Forces, the total

to date being 69 Fellows, 512 Associates, 315 Licentiates, and 294 Students:—

### ASSOCIATES.

Belfrage, J. H., Second Lieut. A.S.C. Black, Herbert (of Melbourne), R.E. (Australian Force).

### LICENTIATES.

Blackett, W. A. M. (President of the Victorian Institute of Architects), R.E. (Australian Force).

Fletcher, E. G., Second Lieut., Durham Light Infantry.

Venning, H. R., Lance-Corporal, R.E.

Ward, W. H., jun., Major R.F.A. (has been serving since August 4, 1914).

### STUDENTS.

Cash, H. W., Suffolk Regiment.

Gray, Andrew, Norfolk Regiment.

Roberts, Kenneth M., London Electrical Engineers.

### Promotions, Appointments, etc.

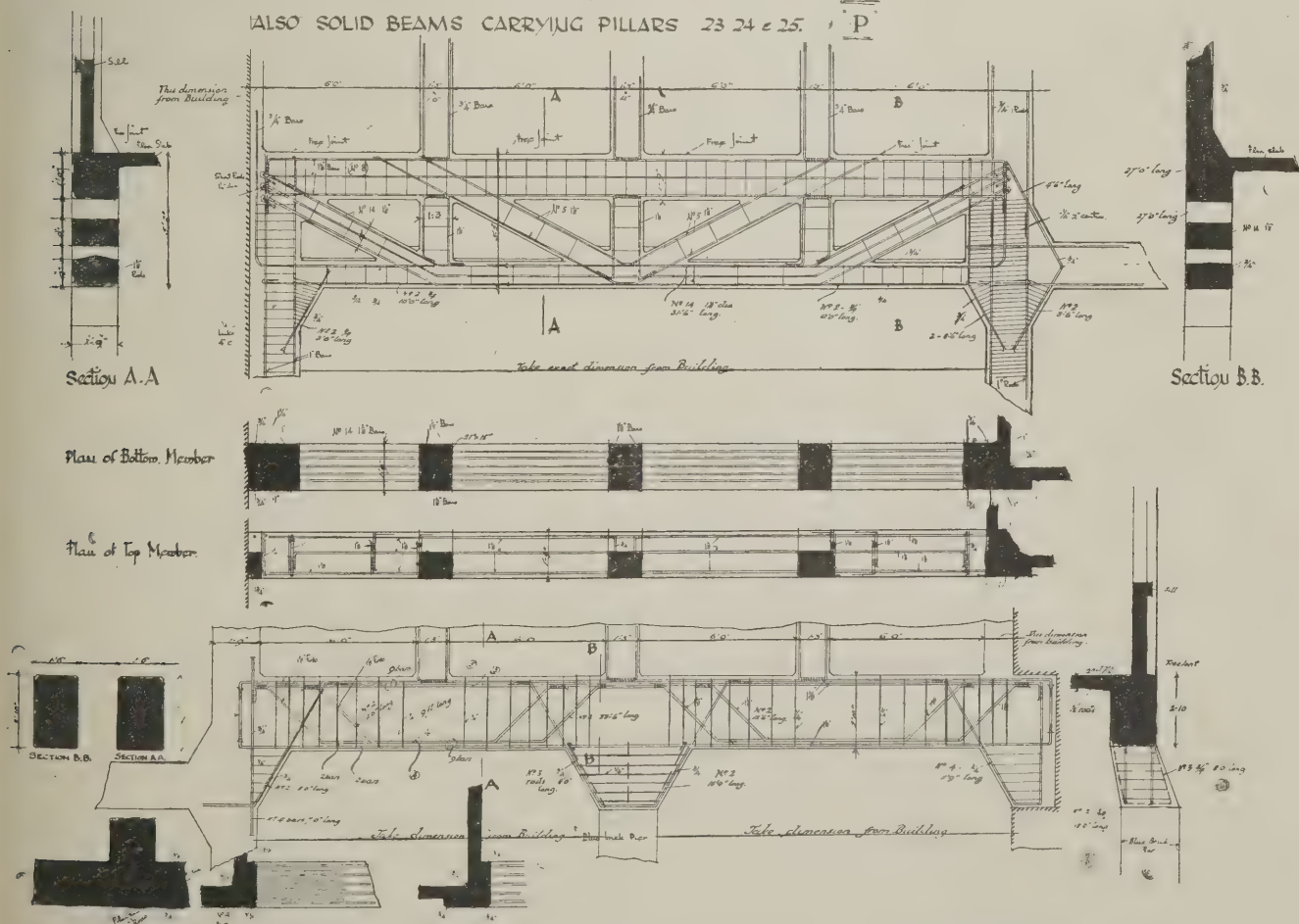
Corlette, Major Hubert C. (F.), King Edward's Horse, Special Reserve Cavalry (King's Oversea Dominions Regiment), was appointed last November Chief Recruiting Staff Officer, 9th R.D., R.A. (Headquarters, Norwich). Howitt, Captain T. C. (A.), has been promoted Major, Leicestershire Regiment.

## R.I.B.A.

### Annual General Meeting.

The annual general meeting of the Royal Institute will be held on Monday, May 7, 1917, at 5.30 p.m. precisely, for

1/2 DETAIL OF TRUSSED BEAM CARRYING PILLARS 12, 13 & 14. "Q"  
ALSO SOLID BEAMS CARRYING PILLARS 23, 24 & 25. "P"



MILL EXTENSION, LEICESTER: DETAILS OF REINFORCED CONCRETE BEAMS.

EVERARD, SON AND PICK, ARCHITECTS.

the following purposes: To read the minutes of the special and business general meetings, held Monday, March 5, 1917; formally to admit members attending for the first time. To consider the annual report of the Council for the official year 1916-17.

*Informal Conferences, May 2 and 16, at 3.30.*

May 2.—"Education of the Architect" (adjourned from February 21). Opener, Mr. Harry Wilson; chairman, Professor W. R. Lethaby (F.). May 16.—"Co-operation in Design." Opener, Mr. A. R. Jemmett (F.).

#### *Licentiatees and the Fellowship.*

The next examination of Licentiatees desiring to qualify for candidature as Fellows will take place in July. Applications for admission must be sent to the Secretary before the end of May.

## BOOK NOTICE.

### *A Masterly Manual of Lettering.*

It has been very gratifying to notice—and we have frequently taken occasion to comment upon the fact—the recent vigorous growth of taste in lettering. In early and mid-Victorian days, this branch of art had sunk into a deplorable state of decay. On fascias and other shop signs, on hoardings, and in the "display faces" of typography, one saw everywhere a sad falling-off from the austere purity and grace of the Roman character. An enormous amount of really accomplished manual dexterity was worse than wasted on exaggerations and distortions of the simple, true, and essential forms, from which it is always perilous to make any very wide departure. Legibility, the alpha and omega and the cardinal virtue of good lettering, was often deliberately sacrificed to extravagant essays in originality, or to an exuberance of fancy that was foreign to the subject. Styles of lettering racy of a given provenance or period were inappropriately placed or incongruously mixed, so that a signboard or a display advertisement might be a distracting jumble of East and West, of early and late, lines of letters that in character were centuries and continents asunder being mixed in chaotic confusion.

It was during the eighteen-eighties that a great wave of reform began to gather volume and momentum. Typefounders began to produce really beautiful letters, and printers to use them with taste and discretion. Signwriters, as well as printers, were being better taught in the technological schools: architectural draughtsmen were realising very vividly that slovenly or fantastic lettering did not add to the grace of a design or to the legibility of a plan. In 1906, the reform had reached a stage at which it was possible for a writer in the "Athenæum" to refer to "the new school of scribes and designers of inscriptions" as having "attacked the problem of applied design in one of its simplest and most universal applications," and to admit that they had "already done a great deal to establish a standard by which we shall be bound to revise all printed and written lettering." "If once," the writer continues, "the principles they have established could gain currency, what a load of ugliness would be lifted from modern civilisation! If once the names of streets and houses, and let us hope, even the announcements of advertisers, were executed in beautifully

designed and well-spaced letters, the eye would become so accustomed to good proportion in these simple and obvious things that it would insist upon a similar gratification in more complex and difficult matters." To-day, amidst much lettering that is still deplorably bad, one encounters not infrequently examples that are not merely void of offence, but are positively and unquestionably beautiful. For this reform we are greatly indebted to the late Wm. Morris, to Mr. T. J. Cobden-Sanderson, and, by no means least of all, to Mr. Edward Johnston, whose fascinating book on "Writing and Illuminating, and Lettering" has this year reached its eighth edition—a sufficiently convincing proof of its widespread influence. In this volume Mr. Johnston not only presents, in a series of plates, specimens of the best lettering extant—Roman, Italian, French, English, Irish—but he gives detailed instructions, copiously illustrated, in every phase of the arts of writing, illuminating, and lettering. He describes all the tools and apparatus of the craft, and gives most valuable hints as to the manner of using them to the best effect. What is of at least equal importance, he analyses the qualities of good models, and, in short, does all that is possible to set the student well on the way to become an accomplished artist within this scope. Mr. Johnston's mastery of his beautiful art includes not only its technique but its history, of which he gives a most interesting sketch; and the quality of his matter, and the skill and taste with which he has handled it, are in nowise overstated by Professor W. R. Lethaby (who is the editor of the "Artistic Crafts Series of Technical Handbooks," of which this volume is probably the most successful unit) in the passage in his preface in which he says, "This volume is remarkable for the way in which its subject seems to be developed inevitably. There is here no collection of all sorts of lettering, some sensible and many eccentric, for us to choose from, but we are shown the essentials of form and spacing, and the way is opened out to all who will devote practice to it to form an individual style by imperceptible variations from a fine standard." That is admirably just; and the last sentence entirely reconciles us to the absence of any specific example of architectural lettering. Principle and practice, however, are incomparably more clearly exhibited in this volume than in any other treatise on the subject that we have as yet seen, and it should be in the hands of every architectural draughtsman who aims at mastery of the spirit as well as of the letter.

"Writing and Illuminating, and Lettering." By Edward Johnston. With diagrams and illustrations by the author and Noel Rooke. Eight pages of examples in red and black, and twenty-four pages of collotypes. Eighth edition, 1917. 500 pages, 7½ in. by 5 in., price 6s. 6d. net. London: John Hogg, 13, Paternoster Row. (The Artistic Crafts Series of Technical Handbooks. Edited by W. R. Lethaby.)

### *English Church Woodwork.*

Messrs. B. T. Batsford announce that they will shortly issue "English Church Woodwork," a study in craftsmanship during the Mediæval period, the text of which has been written by Mr. Frank E. Howard, the well-known archaeologist of Oxford, while the illustrations are contributed by Mr. F. H. Crossley, of Chester. The book is the first to present a full survey of its great subject, and is a reminder of the extraordinary achievements of English craftsmen in the design and carving of church fittings, an art in which it is scarcely too much to claim for England a supremacy during later Mediæval times. The striking and varied beauty

and masterly execution of this native work will prove remarkable and surprising, even to those not ignorant of church art. The large number of original illustrations, from photographs, are arranged in the endeavour to define the characteristics of the different schools of local design prevalent at the time, particularly in East Anglia, the Midlands, and the South-Western counties—a fascinating subject which will repay further study and research.

## OBITUARY.

### *Lieutenant Walter Anderson Porkess.*

Lieutenant Walter Anderson Porkess of the Royal Flying Corps, who was killed in action whilst flying on February 10, was the youngest son of Mr. U. Porkess, builder, of Grimsby. When, soon after the outbreak of the war, he enlisted, he was on the staff of Messrs. Heal and Sons, London. After six months in the Royal Bucks Hussars he was transferred to the Inns of Court O.T.C., and later obtained a commission in the Sherwood Rangers Gloucester, from which regiment he was attached to the Royal Flying Corps. Here he made rapid progress, won his "wings" very quickly, and was soon sent over to France on active service.

### *Captain J. Norquoy.*

Captain James Norquoy, Middlesex Regiment, killed in action on April 19, 1917, was the youngest son of the late William Norquoy and of Mrs. Norquoy of Chorlton-cum-Hardy, Manchester. Captain Norquoy joined the Royal Fusiliers in the beginning of September, 1914, and in November of the same year was gazetted lieutenant in the Middlesex Regiment. For some time he acted as a signalling officer, and in November, 1915, was promoted captain. In February of this year he was slightly wounded in the hand, but remained at duty. He was an architect, and was educated at the Hulme Grammar School, Manchester, and the Manchester School of Art. On leaving school he joined the Volunteers, and held the rank of sergeant. He was also very keenly interested in the Boys' Brigade, which he was an officer for many years. Captain Norquoy had been in business in London for several years before the war.

## BUILDING PLANS (OFFICIAL RETURN).

Returns received by the Board of Trade from ninety-four of the principal urban districts in the United Kingdom (exclusive of the County of London), giving the estimated cost of the buildings for which plans were passed during the first quarter of 1917, show that there was a decrease of £475,362 (or 22.2 per cent.) as compared with the corresponding period of 1916.

The population of the districts included in the Returns is over 12,000,000.

Compared with the corresponding period of 1916 there was an increase in the value in factories and workshops (14.2 per cent.), but a decrease in all other classes, the most marked being in shops and other business premises (77.0 per cent.). There was an increase in the Midlands district (21.9 per cent.), but every other district showed a decrease, which was most noticeable in Wales and Monmouthshire (74.4 per cent.) and Lancashire and Cheshire (54.5 per cent.).



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MAY 9, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1166.

HAT the Royal Academy Exhibition, to which members of the Press were admitted last Wednesday and Thursday, is "not so good as it used to be" need not be said. "It never was," as an editor of "Punch" retorted to a similar criticism. One's general impression of it, however, is that, all things considered, it is a wonderful proof of the resource and resiliency of our country. Now and again, it is true, one comes upon an exhibit that raises doubts as to whether it would have been admitted if competition had been keener—if many an artist had not thrown down brush or burin or chisel to take up rifle or sword and to take unto himself the wings of the airman. Yet, on the whole, the average of merit is well maintained. Men whose reputations are of such old standing as to suggest more milestones than the recruiting officer cares to count make a gallant show, and they are vigorously supported by women whose numbers this year, we should imagine, are unprecedented in the annals of the exhibition. There is hardly a page of the catalogue that is not adorned with the grace of some Constance, or Gertrude, or Beatrice, some Madeline, or Florence, or Hilda. Even to the Architectural Room ladies lend the charm of their presence; Miss Florence Camm, Miss Eugénie Richards, and Miss Eve Roach showing excellent designs for stained glass. If this same Architectural Room falls somewhat short of the anticipations that had been built upon the wise decision of the Academy to admit photographs, that is because, to a more considerable extent than even painting and sculpture, building languishes. It will not be fair to judge of the success or otherwise of the innovation until normal conditions are restored.

As an addendum to observations made a few weeks ago in these columns with respect to the practice, too often neglected, of making architectural models before proceeding with building work of any considerable magnitude, it is interesting to note that Sir John Volfe-Barry, K.C.B., youngest son of the late Sir Charles Barry, has presented to Parliament a series of the original models of parts of the building in which it is housed. These comprise the two towers, and the exterior of the central hall. The models are made of plaster of Paris, and may be assumed to have been very carefully preserved, otherwise they would not have been worth presentation. For those who can obtain access to them—and it may be assumed that this favour will be freely accorded—these models will afford the means of a very instructive comparison between the original conception and the finished work. If models of great public buildings served no other purpose, they would be well worth the making for the benefit of posterity; but, quite obviously, the great differences usually evident as between the model and the actual building show the model as something not to be implicitly followed, but to be modified or improved upon in the light of what it reveals; for even an accomplished architect realises more vividly when he can study his design in three dimensions.

Again a request for permission to change the number of a house from 13 to 12a has been refused by the London County Council. Possibly such refusals are a little hard on the owners or landlords, whose object may be purely businesslike rather than absurdly super-

stitious. Silly superstitions are rampant among a public that wears "charms," pampers "mascots," and pours wealth into the laps of palmists and crystal-gazers; and it is notorious that house-hunters avoid the number 13, although, in the comprehensiveness of their ignorance, they may be quite unaware of the origin of the superstition. Some of them go to the length of refining upon it by avoiding a house numbered with digits whose sum is thirteen. We know, for example, of a house of which the rent had to be reduced because of the reluctance to inhabit it on the showing that No. 175 is essentially  $1 + 7 + 5 = 13$ ; which is mere foolishness, but seems to have been turned to practical account, to the detriment of the landlord. Love of the marvellous, the mysterious, the inexplicable, seems, indeed, as rife as ever it was in the days, not so remote as one would like them to be, when old women were burnt to death for witchcraft. One is glad, however, that the London County Council declines to lend countenance to the thirteen superstition, which, we trust, will die a natural death when science comes to its own; although we must admit that this hope is not flattered by the reflection that the scientific mind, as exemplified, for instance, in the late Alfred Russel Wallace, and in certain living men of science of considerable eminence, is by no means immune from superstition of a grosser sort. "A mad world, my masters."

Encouraged, no doubt, by the success of the Day-light Saving system, some ingenious person has endeavoured to extend it to the inclusion of Night Lights. On April 30 the Metropolitan Borough Councils Joint Committee solemnly and regretfully refused to abandon street lighting for the summer months, but agreed "to urge a reasonable diminution of lighting on a uniform basis during May, June, and July." A little more light on the subject would be welcome. What service is this diminished light expected to perform? Is it advanced as a substitute for or as supplementary to moonshine, as occasion may determine? It cannot adequately fulfil both duties, if the diminution is to be uniform, because it will then be too little for the one duty and too much for the other. Moonlight being a variable, the Metropolitan Borough Councils seem to think that they can correct its fickleness with a diminished constant operating through glass whose obscurity is rather typical of the Borough Council mind. These lighting regulations, and the manner in which they are administered, may tend to financial economy, but whether they promote security of life and property is more than doubtful. More persons, we are told, have been maimed or killed as a direct consequence of defective lighting than by all the bombs dropped from enemy aircraft. If that is the fact, what may be called the obscurantist policy seems to fall far short of entire justification. "Lighting as usual" would apparently have done no harm whatever, and would have prevented many lamentable street accidents.

If, however, it can be satisfactorily proved that the makeshift expedients for obscuring the street lamps were in any way effectual, then the sheets of tissue paper, coats of paint or whitewash, and other mean devices for securing that object should be abandoned for decent—not to say more dignified—means of



securing the effect. Street lighting is at best primitive and unsatisfactory, and in its inevitable revision war contingencies will not be overlooked. Nor should civic amenities be ignored. Suburban street lamps and standards are unnecessarily ugly, and they miss much of the utility with which it would be easy to invest them. Each lamp, for example, should certainly show the name of the street in which it stands. This provision should be made even at the risk of sending up the rates, for the ultimate economy would be enormous, supposing that any considerable fraction of the amount of time wasted in wandering about strange streets seeking to wrest from them the Eleusinian mystery of their names could be turned to profitable account. Anyhow, it is a scandal that streets are not more conspicuously labelled, and that street lamps should so seldom serve this purpose.

\* \* \* \*

Mr. Henry Benjamin Wheatley, D.C.L., F.S.A., who died at Hampstead on April 30, in his seventy-ninth year, was London's most faithful historian. His "London Past and Present" is a mine of information upon all that is worth knowing about the history and development of the metropolis, and is one of those rare books which are seldom consulted in vain for what they may be reasonably expected to contain. This book, built on the foundation of Cunningham's earlier work, established Mr. Wheatley's reputation as a topographer of the first order. He had a genius for ferreting out facts, and his inferences from them are usually sound and trustworthy. Many popular books on London depend on Wheatley for their pith and marrow; Wheatley on Cunningham being to London topography what Coke on Littleton was to the student of law. By-products of his investigations were a popular "Story of London" and "Hogarth's London," while "Samuel Pepys and the World He Lived In" did not take its author for any very considerable country excursion. It was probably Pepys's character as a typical Londoner, and as, in a sense, an annalist of London, that attracted Wheatley to him, and led to the foundation of the Pepys Club, of which Wheatley was for many years president, and to the standard edition of the "Diary" which Wheatley edited with loving care. Architects will remember with pleasure his ingratiating practice of ascertaining and recording, whenever possible, the authorship of houses and monuments. It must be counted to him as a virtue for which topographers are not invariably renowned, although one would have thought it essential to their function.

\* \* \* \*

By the death of Mr. Andrew S. Biggart, we lose a great engineer. Not many persons seem to be aware of the extent to which the "eighth wonder of the world," the Forth Bridge, is indebted to his genius and resourcefulness. Trained as a mechanical engineer, he was, at the age of twenty-four, appointed general manager on that titanic undertaking, and the manner in which he fulfilled his trust is to be inferred from his subsequent partnership in the firm of Sir William Arrol and Co., of which subsequently he became the head. In building the Forth Bridge, he had to solve many new problems, to devise many new methods, invent many new tools. He was, in fact, the hero of a very brilliant episode in the romance of engineering, and, as becomes a hero, he was modest, unassuming, and of so benevolent a temperament that it was said of him that he paid as much anxious attention to the bodily and spiritual welfare of the thousands of men under him as he did to the details of the work he set them to do. No doubt the stress and strenuousness of it all shortened his life, although he lived to be nearly sixty; for such abounding vitality as must have been his would, if less lavishly expended, have tended to longevity. But great engineering and great architectural works too often kill their authors.

## CORRESPONDENCE.

### *Dundee Housing and Town-planning Schemes.* To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIRS,—In the remarks under the above heading your issue of April 18, it is stated that "in the preparation of these plans the opportunity is taken of showing how persons of the working-classes who are sufficiently aspiring may be enabled, as they are clearly entitled, to raise themselves from their present insanitary and sordid surroundings to dwellings which provide nothing more than the just due of human beings. Types A, B, and C, illustrated on page 187, indicate the minimum of accommodation reasonably required in houses for the working classes."

As one who is engaged in the designing of town planning and housing schemes, I turned with speed to page 187, and saw to my amazement the plan of Type "A," which has no bedroom, but a bed in the living-room, with larder opening off the same apartment, and a w.c. in a corner of the kitchen! Is this seriously shown as a sample of the height to which the workman is to be raised, and "which provides nothing more than the just due of human beings"?

Cardiff.

J. ALGERNON HALLAM.

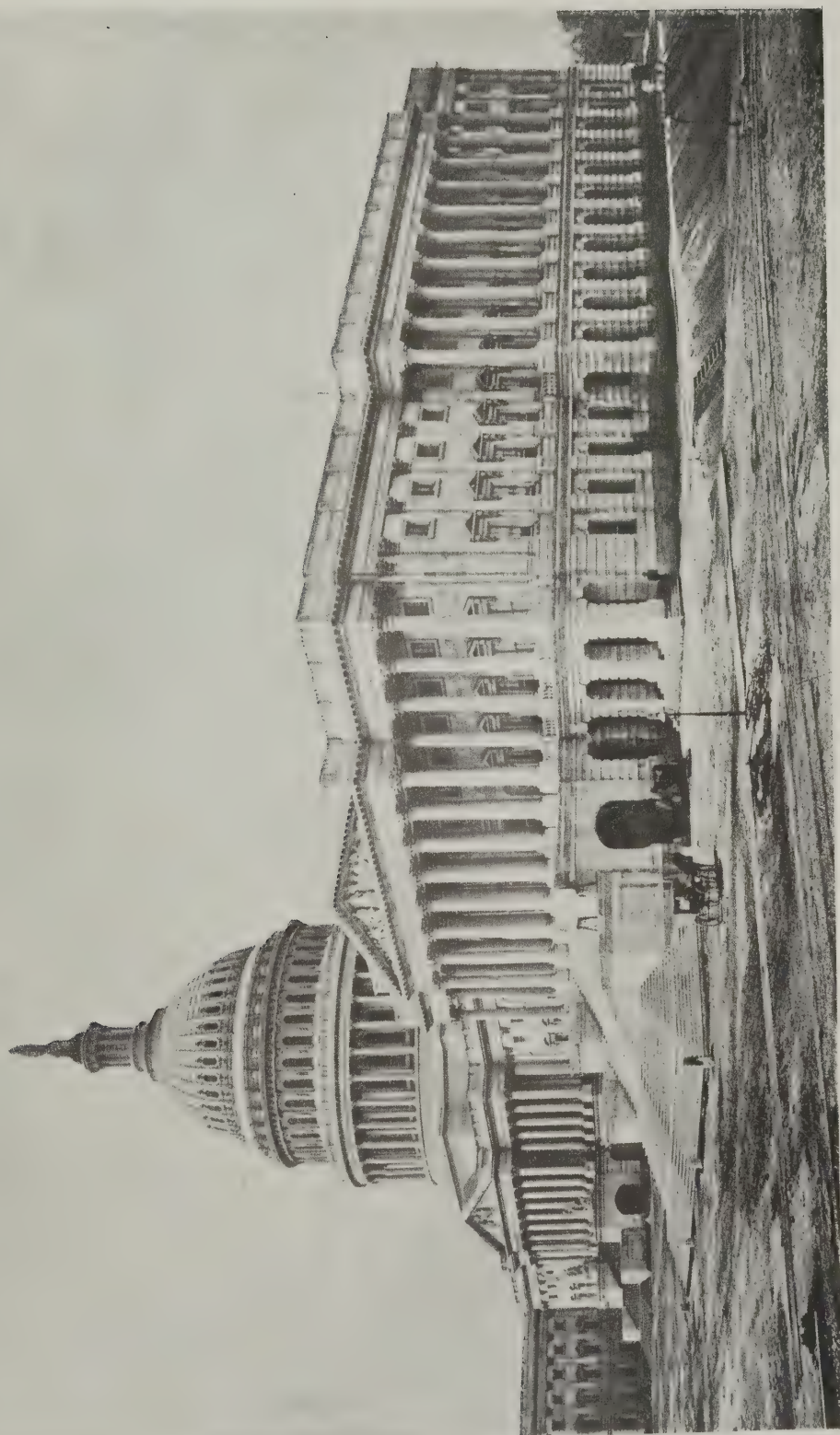
We forwarded Mr. Hallam's letter to Mr. James Thomson, who courteously sends the following interesting reply:—

SIRS,—It is always a pleasure to have criticisms on one's proposals from an expert on the subject under discussion, but it is advisable that the critic should make sure of his ground beforehand. Your correspondent says he "turned with speed" to a certain page in your Journal and found the type of house which was "a sample of the height to which the workman is to be raised." Here, in his haste, he has gone wrong. The house in question is not proposed to be occupied by a workman, but by a *workwoman* earning about £1.10s. per week, and I trust there is no expert on housing who would suggest that these people should be accommodated in cottages of three rooms or upwards which they could neither furnish, nor use, nor pay for. Out of 965 houses embraced in the schemes thirty-eight, or 4 per cent. only, of the type in question are proposed to be erected. They are designed to meet the requirements of the poorest of the population, not of artisans.

The criticism of the position of the w.c. on the sketch plan is quite fair, although it is wrongly described as entering from kitchen instead of from kitchen-scully, and on reconsideration the position was altered and a small lobby provided in the full-size model which has been erected. Of course, one has to economise space as much as possible in planning a house of this description, and has always to keep in view the financial side of the question.

On the criticism as to providing dwellings which are the just due of human beings, one must know, before he can fairly criticise, what is proposed to be provided and what the housing conditions proposed to be abolished. Your correspondent, it is to be presumed having regard to his housing experience, must be acquainted with the housing conditions of the poor in large towns. Here the people are crowded in certain areas to the extent of from 400 to 600 persons to the acre, and it is now proposed to house them under such conditions that the number will not exceed probably one-tenth of that figure to the acre; here a garden or allotment in a congested area is of course impossibility, while in the proposed schemes each tenant will have that amenity; here a w.c. to four or even more tenants is common, and it is made a *sine qua*

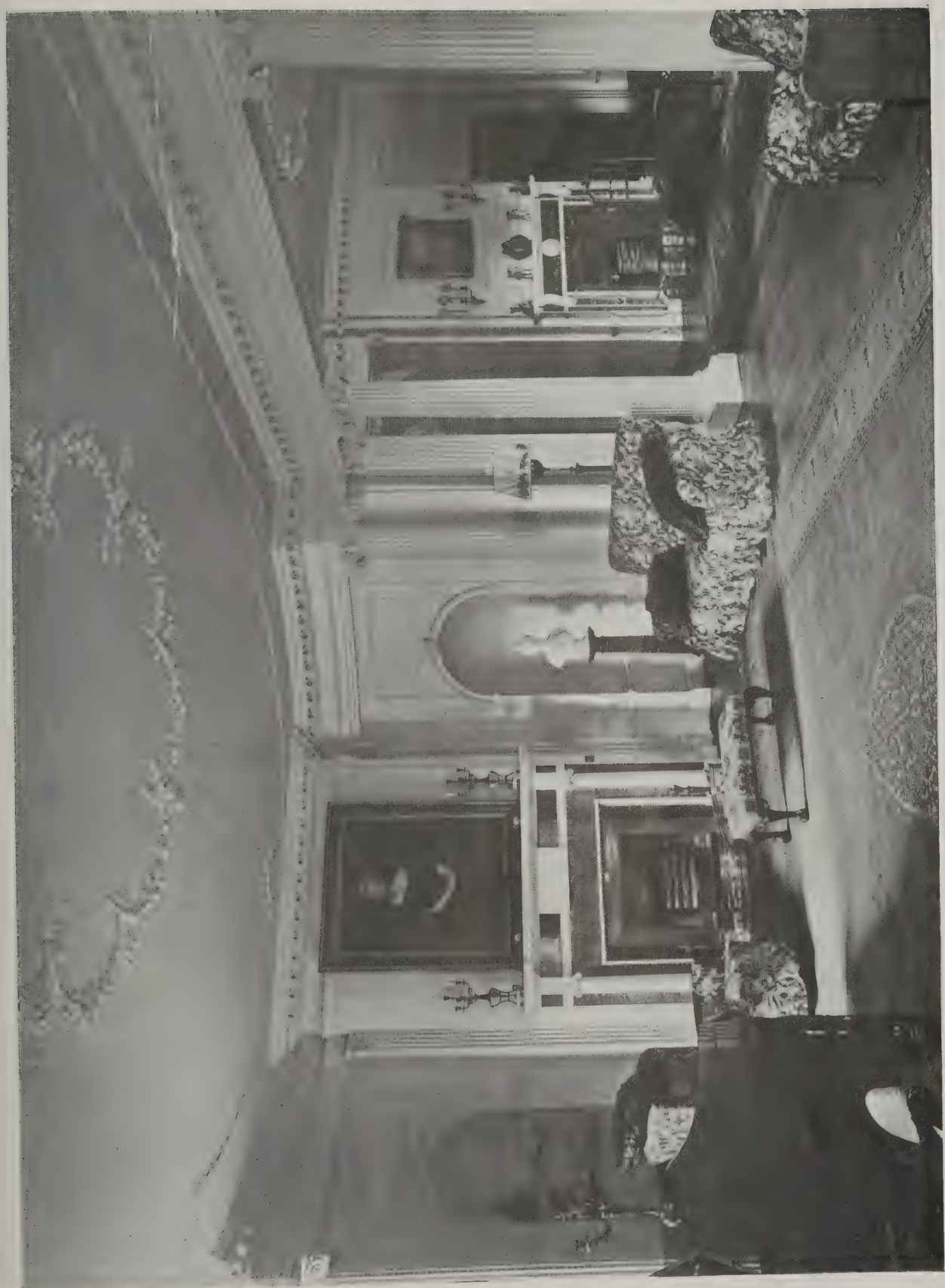




MONUMENTAL ARCHITECTURE (SERIES II.). XIII.—THE CAPITOL, WASHINGTON: EAST FRONT.







MODERN DOMESTIC ARCHITECTURE (SERIES III.) V.—THE DRAWING-ROOM, FRAMINGHAM HALL.

GEORGE J. SKIPPER, F.R.I.B.A., ARCHITECT.

(Royal Academy Exhibition.)





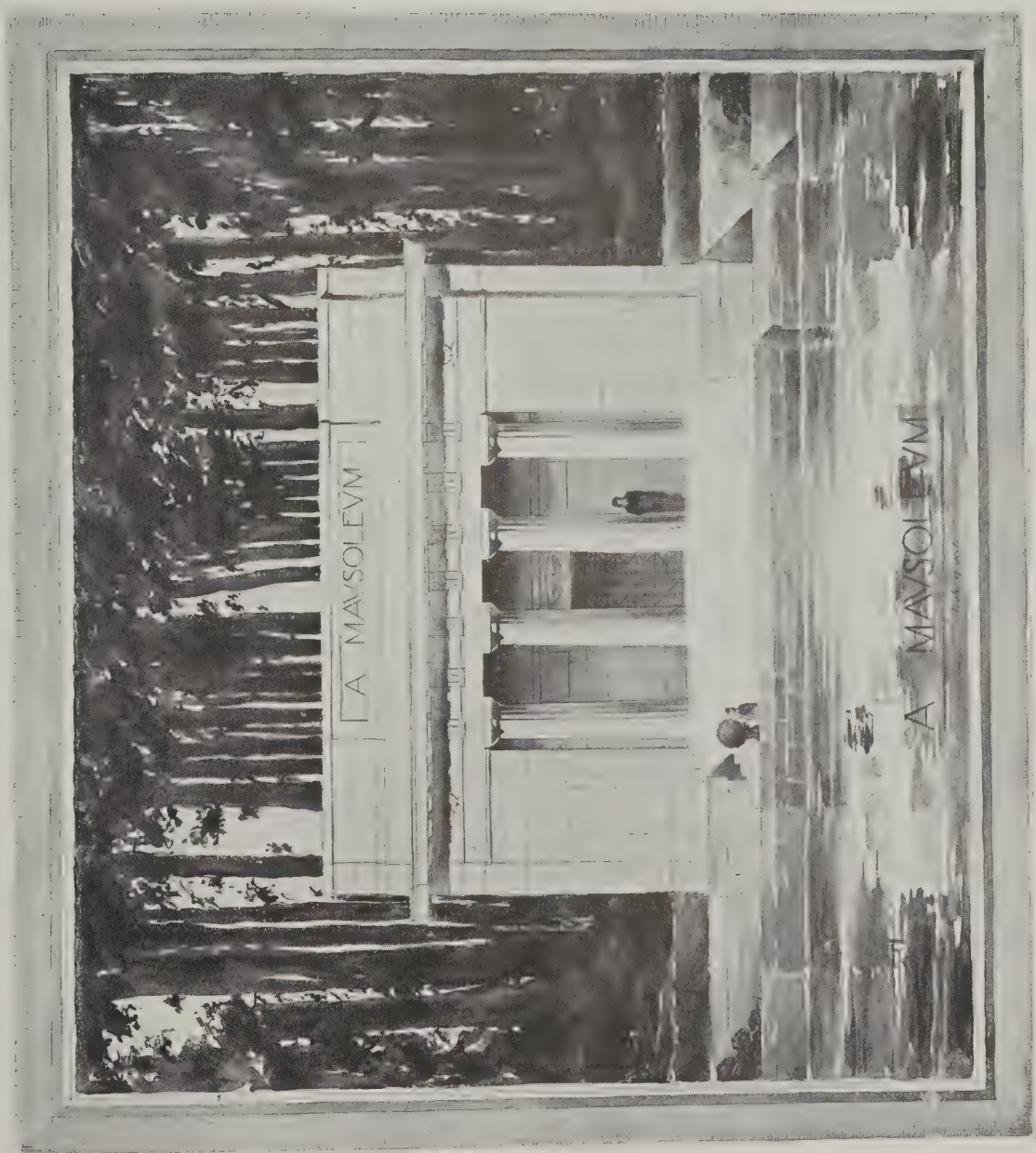


MODERN DOMESTIC ARCHITECTURE (SERIES III.). VI.—HALL AND STAIRCASE, "HEATHCOTE," ILKLEY. YORKS.

EDWIN L. LUTYENS, A.R.A., F.R.I.B.A., ARCHITECT.







STUDENTS' DRAWINGS (SERIES II.). XLV.—DESIGN FOR A MAUSOLEUM.

BY GORDON HEMM.



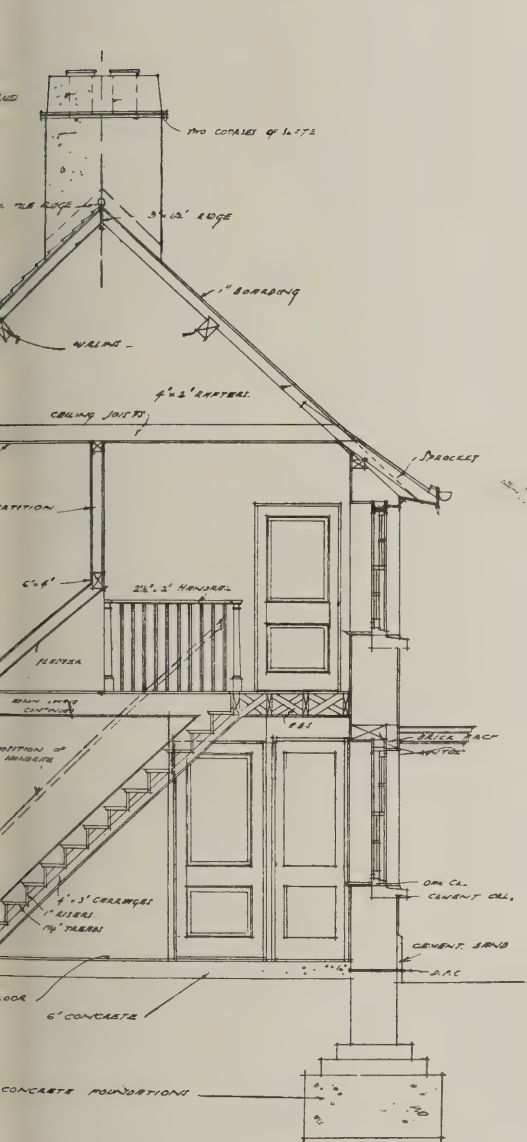


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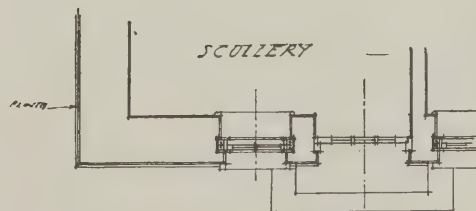
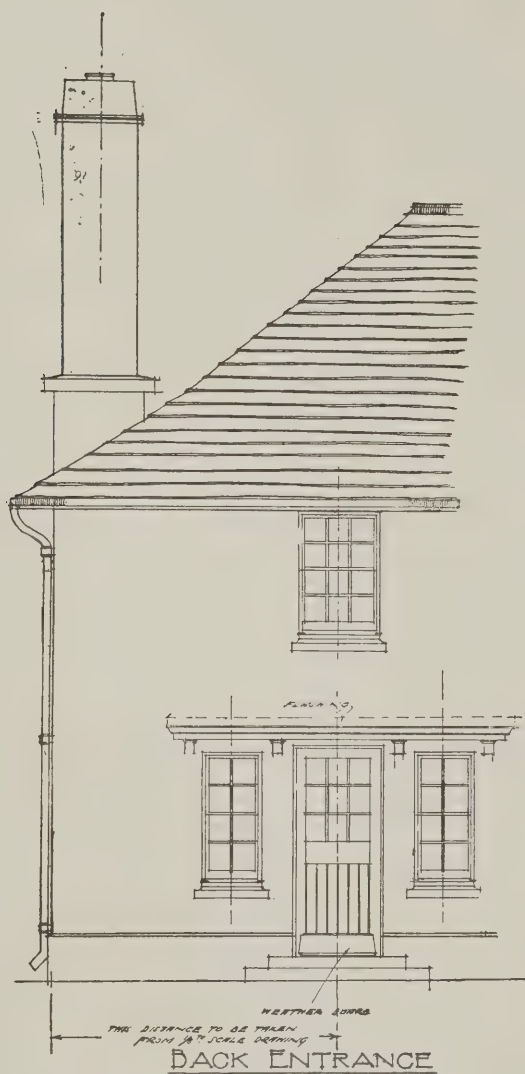
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SECTION



PLAN

RICHARDSON AND GILL, ARCHT.  
ARCHITECTS.  
41 RUTLAND SQUARE, N.C.

S AT FORDINGTON, FOR THE DUCHY OF CORNWALL.  
A., ARCHITECTS.





on in the schemes that such tenants shall each be provided with this convenience.

But it is unnecessary to elaborate on what exists and what is proposed. Bad housing is well understood in all large towns, and it may be said in a sentence that the change proposed will be so great and the equipment of the houses so superior, as compared with existing houses, that it would be quite fair to say that the poorest of the Dundee population will, it is hoped, be housed in dwellings which provide nothing more than the just due of human beings. The position of larder, scullery, fixed cupboards or cabinets, the heating of living room, the supply of hot water, and the installation of electric light will be equal if not in advance of the finish and equipment of many so-called model cottages which I have had the privilege to examine, and one must remember as well the provision of up-to-date wash-houses and baths in each scheme for the use of the tenants. Let me add that, should Dundee be so fortunate as to be allowed to proceed with the proposed schemes, it will afford me the greatest pleasure to have personal examination and criticism and suggestion by those who, like your correspondent, take an interest in town-planning and housing.

Dundee.

JAS. THOMSON.

## THE PLATES.

### *The United States Capitol, Washington.*

THE visit of Allied statesmen to the United States has aroused considerable interest in the Capitol, Washington, where Mr. Balfour is to deliver an important speech. The view of the exterior of the building, published on one of the plates in this issue, will therefore be studied with more than ordinary interest, familiar as the building doubtless is to most of our readers. The original Capitol is the work of several individuals—Hallet, a Frenchman; Thornton, a West Indian by birth (and a physician by profession, practising in Philadelphia); Hadfield, an Englishman; Hoban, an Irishman; Latrobe, another Englishman; and Charles Bulfinch, of Boston. It was completed in 1827, and constitutes the central block of the present composition. This includes the old Chambers of both Houses, the Supreme Court, and to the west, in the projecting pavilion, the halls of the old Library of Congress, and their dependent offices and lobbies. From 1850 to 1865 the north wing, containing the present Senate Chamber, and the south wing, containing the House of Representatives, also the present high dome above the old building, were added by Thomas V. Walker. The old House became "Statuary Hall"—a kind of National Pantheon—and the former Senate Chamber that of the Supreme Court. The material of which these wings are built is white marble, but the large dome is constructed of cast iron.

### *Drawing Room, Framingham Hall.*

Alterations and additions to Framingham Hall, for Mr. J. E. Moxey, were started before the war, and had to be sufficiently completed for occupation. The drawing-room was finished some time ago. The walls are panelled in pine and painted white, the floor is of oak, and the chimney-pieces of white and Sienna marbles. The cornice and ceiling, in plaster, are the work of Mr. Crotch, of Norwich. The general contractor is Mr. S. Gill, also of Norwich. The photograph illustrated is exhibited in the Royal Academy. Mr. George J. Skipper, F.R.I.B.A., is the architect.

### *Hall and Staircase, Heathcote, Ilkley.*

This hall, with its fine staircase, is a typical example of that individual English Renaissance manner which Mr. E. L. Lutyens has developed with such remarkable success. The wrought-iron balustrading is of a particularly graceful design.

### *A Mausoleum.*

This design, an adaptation of the Doric Order to a small composition, is by Mr. Gordon Hemm, of Liverpool University School of Architecture. Tall trees provide a sombre background, and throw the building into bold relief.

### *Cottages at Fordington, Dorset.*

These cottages, of which a working drawing is reproduced on the double-page plate in this issue, have been designed for the Duchy of Cornwall by Messrs. Richardson and Gill, F.F.R.B.A., and the conceived in the spirit of local work, which has a traditional character of its own.

## EFFECTS OF EXPLOSION ON VARIOUS TYPES OF BUILDINGS.

THE behaviour of different classes of building construction in the great explosion in the eastern outskirts of London was clearly marked, and affords, a writer in "The Times" observes, valuable data for architects and structural engineers.

The soil being of alluvial character, the earth tremors imparted by the explosion naturally caused the whole district to shake like a jelly and so contributed to the destruction resulting from air concussion, particularly in the case of structures built of materials possessing little or no cohesion and relying for stability on the force of gravity and the steadiness of their foundations. Timber and steel-frame sheds open at the sides and ends suffered comparatively little from shock, as the air waves were able to pass through them without encountering much obstruction, and the elasticity of the connected framework proved sufficient to prevent any material damage to the latter, although roofing and external wall sheathings were blown away. Of one steel-frame shed about 200 yards long by 33 yards wide nothing remained but the naked steel skeleton, which was intact. One-storey sheds and similar structures closed on all sides were generally wrecked.

Where exposed to the full force of the explosion brick buildings of all kinds showed up very poorly. Two large factory buildings near substantial brick buildings embodying high-class work fared almost as badly as more flimsy structures of the kind run up by the speculative builder. At distances of a quarter of a mile or more from the scene of the explosion, brick buildings of light proportions were seriously damaged, though others of massive construction escaped material injury.

The most striking cases of resistance to the shock of the explosion were furnished by several reinforced-concrete buildings in and around the zone of maximum concussion. All such structures of the skeleton monolithic type withstood the shock without injury.

The various fires which followed in the wake of the explosion confirmed previous experience as to the behaviour of different classes of building construction. Timber sheds were entirely burnt up, brick buildings with timber floors and roofs were reduced to empty shells, and those having stanchions, girders, and roofs of steel were gutted. . . . On the other hand, the fires that occurred in three of the structures partly or entirely of reinforced-concrete floors amply proved the value of that material from the point of view of fire protection. In two of them the fires were of great intensity, and were fed by the presence of highly combustible materials. Both of these were undoubtedly saved by the fireproof construction, which itself remained structurally intact, although suffering superficial injury and disfigurement.

[This vindication of reinforced concrete, as published in "The Times," should greatly advance the popularity of the system.]



## ARCHITECTURE AND SCULPTURE AT THE ROYAL ACADEMY.

THIS year's Academy is remarkable, so far as architecture is concerned, for two things: First, the admission of photographs; and, secondly, the small amount of new work exhibited. These two factors are no doubt intimately related, and both are directly traceable to the war. It is by no means easy to imagine so conservative a body as the Royal Academy giving sanction under normal conditions to the exhibition of photographs; so the innovation must be regarded purely as a measure devised to meet the difficulty of filling the walls. With little or no architecture of importance being carried out, and most of our perspective draughtsmen in the Army or engaged in some form or other of war work, it is easy to understand why the necessary number of drawings was not forthcoming. In the circumstances, therefore, the admission of photographs became almost inevitable. Thus has the Academy achieved virtue through necessity.

In principle the idea of showing photographs is excellent; but it must be confessed that the method of hanging adopted by the Academy is very much at fault. Photographs are photographs and drawings are drawings, and no amount of persuasion will induce them to blend. Perhaps the Hanging Committee thought otherwise. In any case, they chose to mix them all up together, and the result is rather bewildering. This being a first attempt, however, it is perhaps somewhat unfair to criticise, so we will add nothing more to what we have said, except to suggest that in future years photographs and drawings shall be kept as much apart as possible.

The most striking feature of the Architectural Room is the preponderance of old work. Quite two-thirds of the buildings on view must be perfectly well known to everybody; some, indeed, have almost begun to fade into the historical past. Though notably lacking in fresh interest, the exhibition in any case provides us with a pleasant opportunity for renewing acquaintance with some old familiar friends. Unfortunately, space will not allow us to deal with every exhibit, nor have we room to offer more than a brief note of critical comment upon the works mentioned.

Among the larger buildings of which photographs are shown are Sir Aston Webb's Victoria and Albert Museum and the Imperial College of Science and Technology, South Kensington, Messrs. Ashley and Winton Newman's Birmingham Council House Extension, Sir Ernest George's Royal Academy of Music, and Mr. Henry T. Hare's University College of North Wales, Bangor. Mr. Reginald Blomfield shows an exterior view of his interesting domed library at Lincoln and a large drawing of "La Trinité," Jersey—a granite house somewhat in the manner of a François Premier château. Mr. Ernest Newton exhibits an attractive series of photographs of his delightful domestic work. If the Academy did nothing more than show us Ardenrun Place, Blindley Heath; Luckley, Wokingham; and Upton Grey Manor, it would still deserve our grateful thanks. Mr. J. Alfred Gotch has an exterior view of his Alfred East Gallery at Kettering, and Professor C. H. Reilly shows the interior of his Neo-Classic Mission Church of St. Barnabas, Shacklewell. Mr. W. H. Brierley exhibits some photographs of interiors at Normanby Park, Lincolnshire (remarkable for their rich decorative plasterwork), and Mr. E. L. Lutyens shows, as examples of his English domestic work, a number of views of Heathcote, Ilkley. A pen-and-ink drawing of his British School at Rome is also on view.

The most striking colour drawings in the whole exhibition are two (presumably by Mr. Walcot, though they are unsigned) of Mr. Lutyens's El Guadalupe, Spain. They show a mansion of palatial character,

with a large expanse of wall surface relieved by a fine imposing entrance and great windows on either side. With a few vivid splashes of colour the artist has deftly caught the true Spanish atmosphere. The drawing seems almost to quiver with heat and vitality. Mr. Robert Atkinson shows three large drawings of a rather fine scheme of development proposed to be carried out at Bath. The scheme would be more intelligible if a plan had been added indicating the present condition of the area to be dealt with.

"From Charing Cross to Bagdad" is the attractive title given to a large bird's-eye view of a design for the proposed new Charing Cross Bridge, by Mr. F. Raffle Davison and Mr. D. Barclay Niven. The drawing shows Charing Cross Railway Station removed to the south side of the river, where a large *place* is formed in connection with a new embankment roadway. An alternative scheme is shown by the same exhibitors. In both designs the bridge is provided with tall pylons at either end in the manner of the Pont Alexandre III, Paris, which seems to have set quite a fashion in bridge design. Mr. Paul Waterhouse exhibits a photograph of the Prudential Building, Leicester, a refined piece of work in the Greek manner, and an admirable water-colour drawing of a proposed branch office for the same company. In both instances Cockerell seems to have provided a basis of inspiration.

Some excellent photographs of the National Library of Wales, Aberystwyth, together with a half-inch working drawing, are exhibited by Mr. Sidney K. Greenslade. The building is remarkable for the strong emphasis of its vertical lines and for the almost complete absence of decorative detail. A water-colour perspective of the Central Colonnade in the Great Hall of Manchester Royal Exchange is shown by Messrs. Bradshaw and Gass. This is a broad conception in the Renaissance manner, with great arches resting on heavy piers and columns. The colour of the columns, a dull brownish-red, is slightly, but not offensively, obtrusive.

The completion of the western towers of St. Mary's Cathedral, Edinburgh, from the designs of Mr. C. M. Oldrid Scott, is shown in an admirable wash perspective by Mr. Charles Gascoyne, who has invested a piece of somewhat dull modern Gothic with considerable attractiveness. Messrs. Romaine Walker and Jenkins, the authors of a good deal of sympathetic work in the nature of alterations and additions to old eighteenth-century mansions, exhibit a group of photographs showing a new centre to the garden front of Knowsley Hall, alterations and additions to Buckland, Berkshire, and a new staircase and gallery to the Painted Hall at Chatsworth. Messrs. Arthur and H. H. Hill show photographs of their monumental Munster and Leinster Bank, Cork, a building which, illustrated in this Journal a short time ago, will be familiar to all readers. Marylebone Town Hall is not particularly well shown in the views exhibited by Mr. T. Edwin Cooper; but the narrow streets which surround this rather fine building are no doubt responsible for this somewhat ineffective photography.

An excellent water-colour drawing (is it by Mr. Walcot? It is unsigned) shows some flats in Park Lane designed by Mr. Frank T. Verity in the style of those which he has already erected elsewhere in the West End, notably in Portland Place. A premiated design, by Messrs. Bradshaw, Gass, and Hope, for Manchester Library and Art Gallery, is shown by a well-drawn wash perspective.

The most important building of the year, the Cunard Building, Liverpool, is represented by two interior perspectives only, drawn by Mr. Frank Rimmington. These, however, admirably convey the fine scale and dignified proportions of the building. A very delicate



piece of perspective drawing in colour is that of Mr. Charles Wade, representing the treatment of an entrance and staircase hall. A house of comfortable and unpretentious appearance, "Redcote," Haslemere, is shown in a pleasant water-colour perspective by Mr. Alfred Hart and Mr. P. Leslie Waterhouse. "Little Cumbræ," Millport, Scotland, is another exterior perspective of a house; which, however, loses a little of its effect by lack of emphasis.

Messrs. Horace Field and Simmons have taken the unusual but commendable course of exhibiting a large wash elevation of Lloyds Bank, Andover, two small photographs of the building being let into the mount of the frame. The refined interior from Framingham Hall, exhibited by Mr. George J. Skipper, is reproduced in this issue. Mr. J. Dudley Forsyth's design for the Architectural Association stained-glass window memorial to Lieut. Stanhope Forbes is shown by a delicate pencil and wash drawing. This was illustrated in a recent issue of this Journal. Restricted space obliges us to omit reference to many interesting exhibits.

### *A Glance at the Sculpture Galleries.*

Art, it would appear, is marking time, and we may well feel grateful that it has not been called to a halt. In the circumstances, it was not to be expected that British sculpture could continue that forward movement with which, during recent years, we have all been so anxious to credit it. In the present exhibition there is nothing that the most sanguine and the most sympathetic admirer of graven images can mistake for a sign of progress. There is nothing in it, one may hazard a conjecture, that will prove an irresistible temptation to the trustees of the Chantrey Bequest.

It happens very fortunately that quite a large amount of work that is being done for the Cardiff City Hall is available for exhibition. If this had been withheld, the show of sculpture would have suffered appreciably both quantitatively and qualitatively. Purists who hold that sculpture done to order is necessarily inferior to that which is conceived spontaneously by the artist may be referred to the leading case of Phidias, and we would append the rider that without the stimulus of a commission very little sculpture would get itself done, the sculptor's art being but little more creative than that of the architect, to which some of us would make it to a reasonable degree subservient. The helpful Cardiff City Hall contingent includes Mr. F. W. Pomeroy's ascetic figure of Howell Dda, the Welsh law-giver, who has a fine forensic face; Mr. H. Pegram's Prince Llewellyn, last native Prince of Wales, whose face is animated and whose body breathes, whose heart palpitates, beneath his most dexterously manipulated robe; Mr. Henry Poole's Giraldu Cambrensis, with his keen face, lean to emaciation, pondering how best to indite those annals which tell us most of what we know about twelfth-century manners and customs; Mr. T. J. Clapperton's sympathetic conception of the soul and body of the scholarly Bishop Morgan, the early seventeenth-century translator of the Bible into Welsh; Mr. Leonard S. Merrifield's really poetic William Pantycelyn, the Welsh hymn-writer, who has the right rapt expression of one seeking an apt phrase for an elusive inspiration; and, lastly, Sir W. Goscombe John's rendering of St. David, the patron saint of Wales, whose uncouth and commanding figure embodies a just conception of the rugged power of the man. In none of these statues—which ought all to have been in the same room, but are not—is the hair, whether of head or of beard, consummately managed. St. David's beard, for instance, is sheer plaster; but doubtless this will all be set right in the marble. The saint's bare toes are perhaps a little too realistically treated. One's admiration for "the realistic touch" is somewhat discounted by an

intrusive sense of humour, and by a suspicion that "realistic touches" are, after all, rather cheap art.

Certainly the sculptor must be allowed his stage properties; everything turns on the way he uses them, and the latitude allowed to such means will vary with subject, object, and locale. Hence one readily forgives, or even welcomes, the somewhat crude symbolism that is to appeal from a bridge to a heterogeneous public for whom the obvious must needs be made plain. We should hold, therefore, that Mr. Paul Montford's group, destined for the Kelvinway Bridge, Glasgow, is amply justified of its eremite effigy of an aged and world-weary philosopher, ruminating half-sternly and half-sadly on the vanity of fame, as symbolised by the skull which has no further use for the wreath of bays. To this complexion must we all come, Horatio, with or without the bays, but grim insistency on this merely incidental fact does not set us violently in love with philosophy, which is so much more than a *memento mori*. Rather it should be a perpetual exhortation to high achievement and right living. A more modern conception of philosophy, even though it involved a less venerable and awe-inspiring figure, would have been more in accordance with the spirit of the age, which has a forward rather than a backward look. For this pessimism Mr. Montford atones in the companion figure of "Inspiration," which is physically as well as morally corrective of the gloomy mood created by the nevertheless noble and dignified "Philosophy." The sweet-faced, hopeful lady has roses to balance the bays, and her other properties—the lute, the comedy mask, and the palette and brushes—are, being familiar, very certain to excite "the joy of recognition." They are the elements of a cheerful atmosphere, though "Philosophy" do his worst to depress us with a harrowing conviction that "knowledge brings sorrow." Anyhow, London may well envy to Glasgow an impressive, dignified, and popular group.

Conditions of time and space forbid anything more than the briefest glance at a few other exhibits which stand out conspicuously either by their size or by their merit—rarely by both. Some of the figurines, no bigger than a tobacco-stopper, are exquisite miniatures, but they do not greatly concern us. Mr. Albert H. Hodge's heroic statue of Captain Scott is impressive. Mr. Henry Poole's St. George is much better in execution than in conception. We cannot believe that St. George had so girlish a face and figure. Mr. Leonard S. Merrifield's Richard Trevithick, inventor of the locomotive steam-engine, and carrying a model of it, is virile and animated, but need not have been set with its legs astraddle in so ungainly an attitude. Sir W. Goscombe John's Lieut.-Col. Lord Ninian Crichton-Stuart we do not greatly admire: the scale, and the laboured detail, are aggressive. Memorials are fairly numerous, but, on the whole, are rather disappointing in achievement. Far and away the best of them, to our mind, is Mr. W. Robert Colton's tenderly graceful panel to Miss Macnaughtan, which has a most winsome appeal. The wreathed medallion portrait of Major H. Phillips Fletcher, D.S.O., has been designed lovingly by his brother, Mr. Banister Fletcher, and is therefore outside criticism, from which, however, it could have but little to fear. It is perhaps the most architectural of all the memorials. Portrait busts there are, as usual, in such plenty that it is here impossible to mention them in detail. They include a lifelike modelling of Mr. T. H. Mawson, Hon. A.R.I.B.A., by Miss Joyce A. Reddrop. A finial for a newel-post, by Mr. W. Reynolds-Stephens, should not be missed: it is both apt and beautiful. Mr. L. F. Roslyn's "Triumph of Labour" is a beautiful and spirited panel, and altogether so popularly interesting as to excite regret that its destination is Washington, U.S.A., where everybody will promptly fall in love with it.



## NEWS ITEMS.

*1,100-ft. Long Dry Dock for Philadelphia.*

The Maryland Dredging Co. has been awarded the contract for the construction of what will be the largest dry dock in the States at the League Island Navy Yard in Philadelphia. The contract will be worth approximately 3,000,000 dollars. The dry dock will be 1,100 ft. long, 200 ft. wide, and 80 ft. deep. The contractors are allowed three years in which to complete the work.

*A Prince Albert Foundation Stone.*

Mr. Delissa Joseph, F.R.I.B.A., the architect concerned in the rebuilding of No. 299, Oxford Street, formerly the premises of the General Medical Council, came across the original foundation stone during the demolition of the old building, and presented it to the Council. It has now been placed in its new premises. The stone bears the following inscription: "This stone was laid by His Royal Highness Prince Albert for the laboratories of the Royal College of Chemistry in the presence of the Council and members, June 16, 1846."

*New Premises Wanted for the Royal Colonial Institute.*

At the annual meeting of the Royal Colonial Institute Sir Charles Lucas, chairman of the Council, mentioned that the greatest need of the Institute was a more adequate home in London. It had outgrown the building in which it was at present housed, and his suggestion was that new premises should be acquired spacious enough to provide a hall for meetings and also a residential club for members. As the Institute would be celebrating its jubilee next year, he thought a scheme for providing a new building of an adequate character should hold first place in their celebrations.

*Proposed Memorial to the late Canon Winter.*

An ambitious scheme has been entered upon by Elland Church people to provide an effective memorial to the late Canon Winter, who was rector of the parish for nearly a quarter of a century, and who died with tragic suddenness in the vestry of the church after preaching on January 14 last. The scheme includes the erection of a rood-screen and two side screens in the Parish Church, together with a monument over the grave in the Elland Cemetery, at an estimated cost of £590; the restoration of the Thornhill Chapel (a portion of the church), the cost being estimated at £300; and the improvement of the sanctuary, at an estimated expenditure of £500; or a total cost of £1,390.

*Glasgow Housing Scheme.*

The Special Committee of the Corporation of Glasgow on Housing and General Town Improvement met in the City Chambers to consider the question of the type of houses to be erected on the ground belonging to the city in Garngad Road. Councillor Morton presided. The committee had before them plans prepared by the Master of Works showing various types of houses which could be built, and also a report and plans prepared by the advisory architects, Messrs. Watson and Keppie. It was agreed that two-apartment houses with scullery and bathroom, and three-apartment houses with scullery and bathroom, should be built, the two-apartment houses to be on the block system and the three-apartment houses to be on the balcony system. The question of

whether shops should be provided was discussed, and it was decided that no such provision should be made. The City Engineer was instructed to prepare plans showing the details of the scheme.

*"A Thousand and One Uses for Gas."*

Hygienic refuse disposal is the subject of the April issue of "A Thousand and One Uses for Gas," published monthly by the British Commercial Gas Association, of 47, Victoria Street, Westminster, S.W.1. The shortage of facilities for the collection, cartage, and destruction of domestic refuse has already reacted very unfavourably upon the public health, and will probably have serious results in the summer, and the proposal that refuse should be daily totally consumed by fire on the premises on which it is produced has very much to commend it from the hygienic point of view. "A Thousand and One Uses for Gas" describes how this may be simply and economically accomplished with the aid of specially designed gas apparatus or the coke furnaces commonly used for water-heating, and it is suggested that local authorities would find it profitable to offer some rebate to householders thus sanitariously destroying their domestic refuse. Householders, sanitary authorities, and others interested should write for a copy of this periodical, with its timely and practical suggestions. The secretary will send a copy post free to any of our readers if this Journal is mentioned.

## SOCIETIES AND INSTITUTIONS.

*Architectural Association of Ireland.*

The annual general meeting of the Architectural Association of Ireland was held on April 26 at 15, South Frederick Street, Dublin. The outgoing president, Mr. H. G. Leask, and the incoming president, Mr. Edwin Bradbury, were successively in the chair.

Mr. Leask first announced that the officers and committee for the session 1917-1918 had been chosen by ballot as follows: President, Edwin Bradbury; vice-president, Louis F. Giron; committee, H. Allberry, G. F. Beckett, A. E. Jones, W. S. Keatinge, H. G. Leask, H. J. Lundy, G. G. Lynes, B. O'Callaghan, and L. O'Callaghan; hon. treasurer, W. G. Clayton; hon. librarian, T. L. Cullimore; hon. secretaries, W. A. Dixon and W. H. O'Donnell; hon. auditors, J. H. Webb and F. G. Hicks.

Mr. Bradbury proposed that the Association should adopt the report and statement of accounts. He said that the members must all agree that, considering the conditions of the last two or three years, the Association had done well. He thought that this was owing to the work of the president and the other responsible officers. The attendance at the classes had not been very good; the sparsity was accounted for by the fact that one-fifth of the Association's members were actually on active service. This was a record of which the Association might well be proud.

*Nottingham and Derby Architectural Society.*

The Council of the Nottingham and Derby Architectural Society reported to the annual meeting that one new member had been elected, while two members and one associate had resigned. The total membership is now 110. In consequence of a request from and subsequent interview with the master builders, the Council have agreed to an alteration in the conditions of

contract, so that architects might certify to pay 90 per cent. on works in progress during the continuance of the war; this to be without prejudice to after-war conditions. The Council state that they have kept up a regular correspondence with the Architects' War Committee, and supported a deputation from the R.I.B.A. and the allied societies to Mr. Neville Chamberlain to request that the services of architects over military age should be utilised in the National Service wherever their professional training and experience would be of value to the State. The hon. librarian Mr. Spencer, announced that several members had again generously given books to the library, and a number of drawings, water-colours, and paintings had been given to the Society by its members. The officials of the Society are to remain in office until April, 1918.

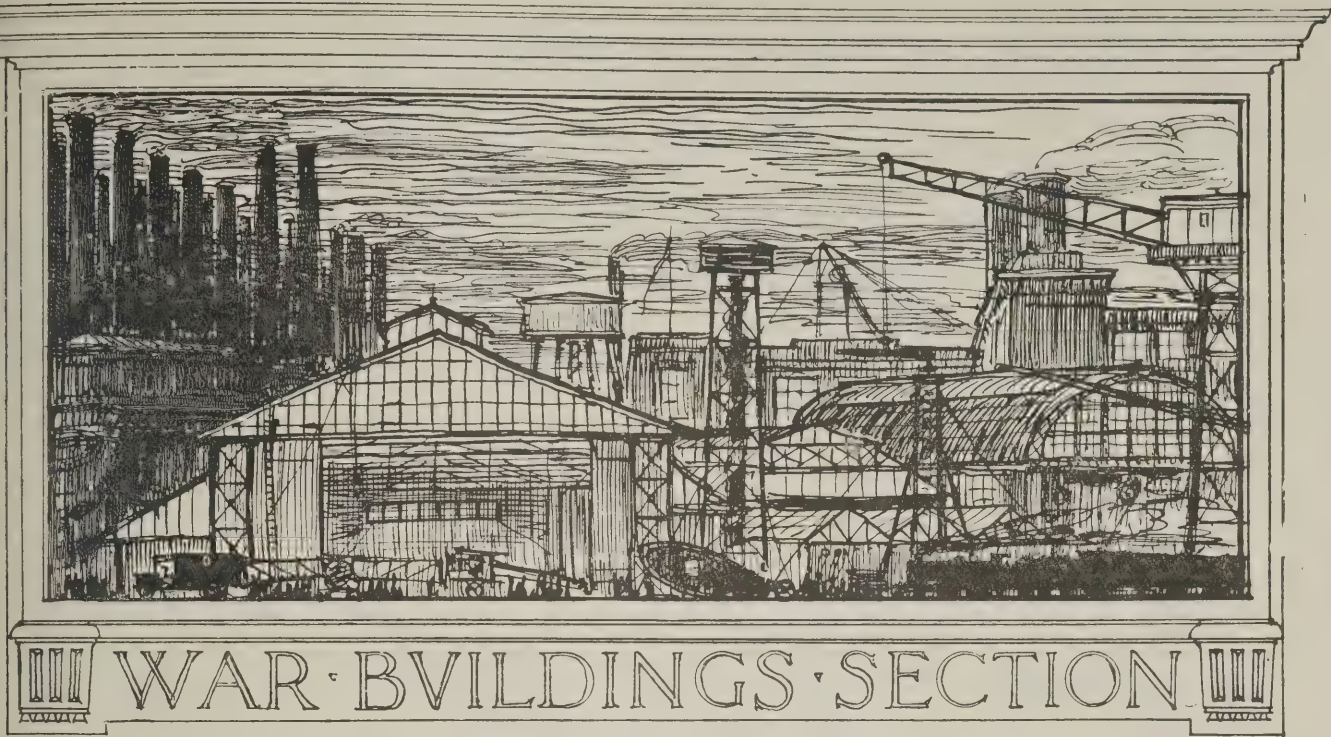
*South Wales Institute of Architects.*

Mr. J. Cook Rees, M.S.A., of Neath has been installed as president of the South Wales Institute of Architects for the ensuing year. The new president was born at Neath, and is the third son of the late Mr. J. C. Rees, contractor. He was articled to Mr. S. C. Jones, and has practised in Neath and district for more than twenty-five years. Prior to the council taking control of the schools he was architect to ten different school boards, and designed numerous schools in Glamorgan and adjoining counties. Several churches have also been designed by him, amongst the number being St. Mary's, Seven Sisters; St. Margaret's, Crynant; St. David's, Abercrave (Breconshire); and St. Mary's, Ynismudw, Portadawe, as well as United Methodist chapels at Skewen and Seven Sisters, and several mission churches. He has acted for the Neath Board of Guardians for many years, and one of the most recent works completed is the Neath Poor-Law Infirmary at Penrhiwtyn (now used as a war hospital, with accommodation for 32 beds), which cost close on £40,000. Mr. Cook Rees has also made a special study of workmen's dwellings and housing schemes, as well as detached villa residences, and some neat examples of the latter are on the Dynevor Estate, near Neath. The members of the Council and officers for the year are as follows: Messrs. E. W. M. Corbett, W. C. Cooper, G. Vincent-Evans, G. E. Halliday, H. Sesom-Hiley, Ivor Jones, David Morgan, Glendinning Moxham, Gomer S. Morgan, Lennox Robertson, J. A. Sant, I. Llewellyn Smith, and Alfred Swash, Council; Mr. H. Teather, hon. treasurer; and Mr. C. H. Kempthorne, hon. secretary.

*Royal Institute of the Architects of Ireland.*

The Joint Committee of the Royal Institute of the Architects of Ireland and the Dublin Industrial Development Association at its last meeting, held at the office of the D.I.D.A., 9, Dawson Street, unanimously adopted the following resolution: "Arising out of the minutes having reference to the use of Irish stone, the Committee learned with great regret that it proposed to adopt red brick frontages in the rebuilding of Sackville Street, including banks and other important buildings. The Committee consider that such a treatment would be quite unworthy of the city, and the occasion, and that Irish stone exclusively should be used in the façades. With due care and economy this improvement need not of necessity materially increase the expenditure."





WAR BUILDING CONSTRUCTION STANDARDISED.

AMONG the many problems created by the war in connection with building construction has been the great scarcity and consequent high cost of timber. This has led Mr. George E. Clare, M.S.A., to devote his leisure, due to war conditions, to the inventing of standardised cavity blocks which are now coming into use as an economical substitute for walls, partitions, floors, roofs, and trimmings, and are known as the "Interloc Construction," which is covered by three patents.

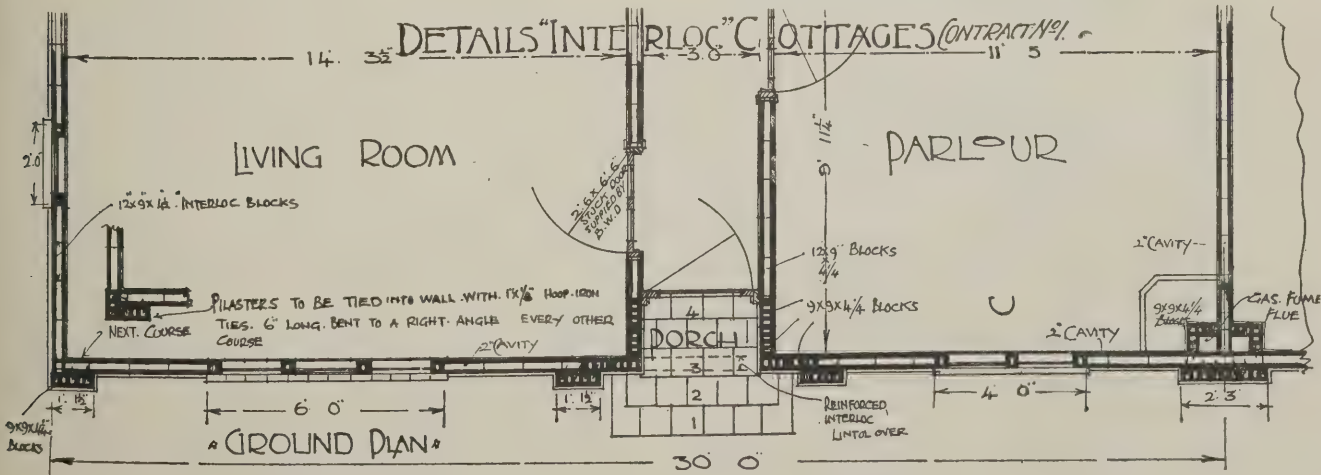
The drawings illustrate two types of buildings that have been carried out in this construction. In both cases the construction was adopted as a substitute for timber-framed walls, partitions, and wood windows, and has given satisfaction.

The cottages number altogether thirty-four, and were built in pairs. Owing to the marshy nature of the sub-soil, the floors were raised about 2 ft. 6 in. from the ground. Two types of plans were adopted, and in each case the accommoda-

tion comprised a porch, entrance corridor, spacious living-room, parlour, and principal bedroom, and two other bedrooms and convenient roomy and working kitchen containing a portable range, bath and sink, and copper supplying hot water, and dresser, also larder, coal-cellar, and w.c.—the two latter entered from a back entrance lobby. The walls were constructed with  $4\frac{1}{2}$ -in. red-faced cavity blocks, with  $4\frac{1}{2}$ -in. pilasters plastered on the inside. The partitions were constructed of the same blocks and plastered. It was intended that the roofs would also be constructed with a similar cavity block and finished with a waterproof plastic solution, but they were eventually carried out with rafters, lathing, and Major's patent interlocking red tiles. The general effect of the exterior walls is a pleasing one and similar to a terra-cotta work. The windows were all constructed of Interloc brick cavity blocks glazed with 21-oz. glass, and the opening lights have inex-

pensive steel casements. This class of window is imperishable, requires very little paint, and is cheaper at the present time than ordinary wood windows. The chimneys and flues were constructed with the same blocks. In the outer walls there is no woodwork of any sort and no painting is required, except the steel casements, which reduces the initial expenditure and the cost of "upkeep" considerably.

A further illustration is given showing the detail of this construction for single walling, double 9-in. walling, and also the blocks used for suspended floors and flat roofs. This illustration also shows the new patent Interloc trimming block for forming (1) base block and skirting; (2) drip window sill and ledge; (3) window-head, lining, and architrave; (4) door sill or threshold; (5) flat or arched head to openings or doorways, reinforced where necessary for large spans, combined with architraves; (6) floors, corbel, and outer string; (7) picture-rail block; (8) eaves-



DETAILS OF "INTERLOC" CONSTRUCTION.



The chief aim of this construction is to eliminate timber and paint and reduce the initial cost and upkeep of cottages and small houses for workers to the utmost limit and at the same time accelerate the speedy erection and occupation. The cavities are useful in rendering the interior weatherproof, cool in summer and warm in winter, and, incidentally, by materially reducing heat losses, economise the fuel consumption and assist in the better utilisation of our valuable natural resources.

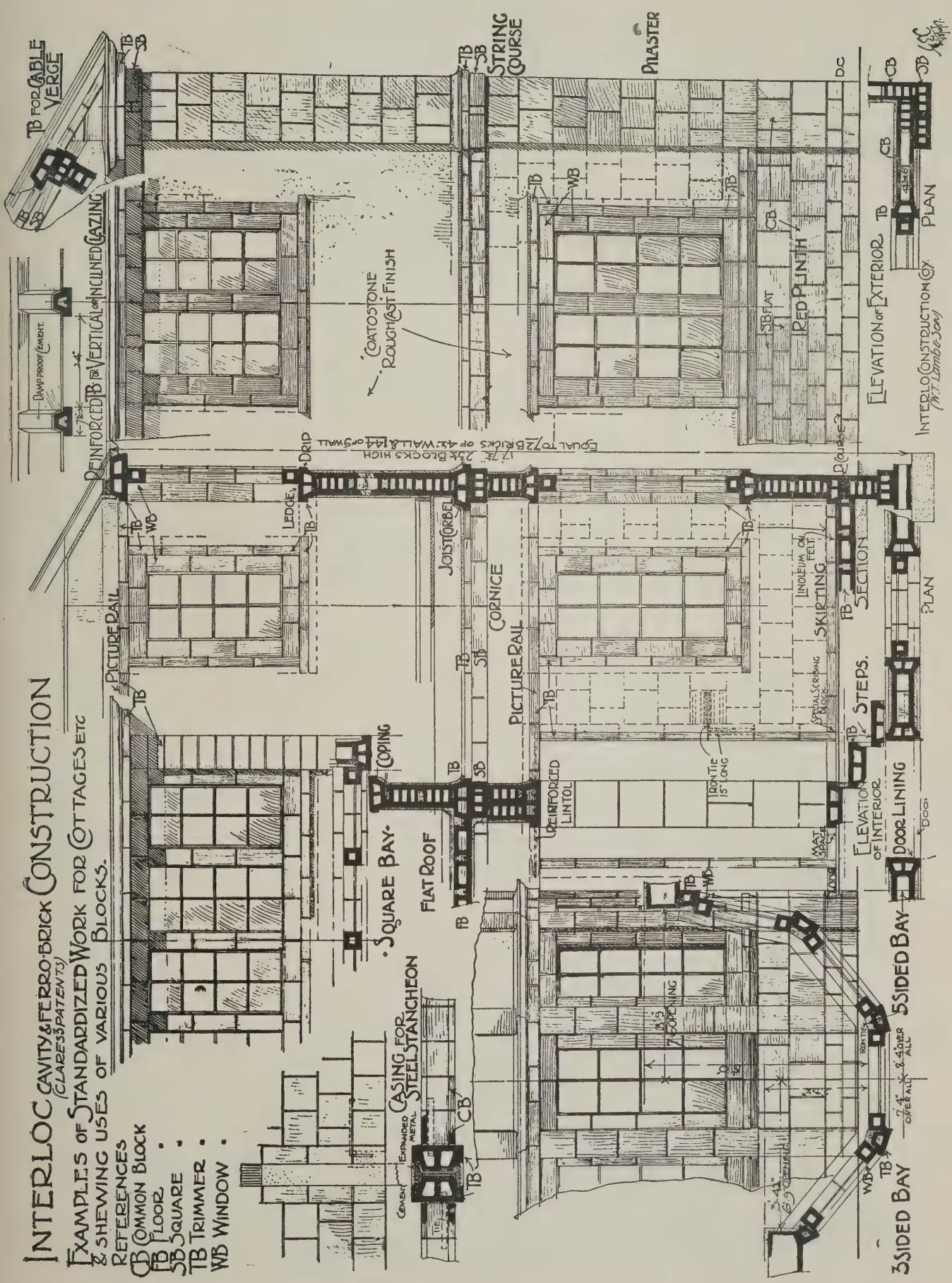
By the use of this construction entire cottages can be erected without timber and with very little paint work except for doors. The cavities replace two-fifths of the solids and reduce the cost of foundations, rail, and road cartage. The standard size of the blocks is 9 by 9 and 12 by 9; the latter size was chiefly used in the cottages illustrated. This size is equal to four blocks, and in a single block wall there are twelve to the yard, instead of forty-eight ordinary bricks.

The small canteen is another example of a small building carried out in the Interloc Construction. This little building is being erected by ordinary estate workmen at one of the Earl Fitzwilliam's collieries.

We understand that larger canteens and other buildings for war workers, also cottages for colliery miners, are being erected in this construction. We are informed that the blocks are now being turned out by several brickyards for the company.







DETAILS OF "INTERLOC" CAVITY AND FERRO-BRICK CONSTRUCTION.

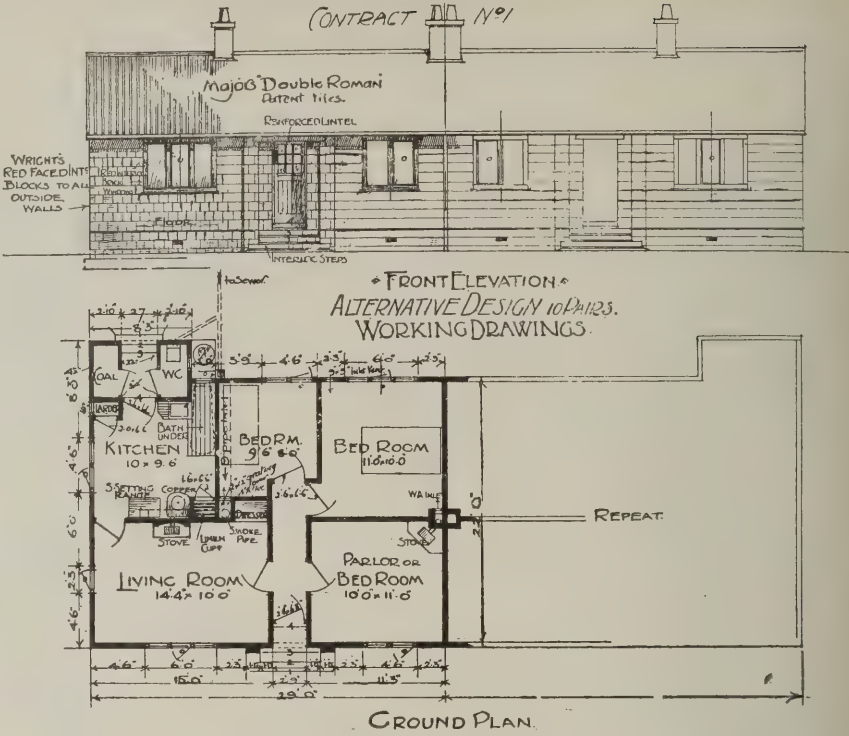


and the usual cost of the largest size, numbering twelve to the yard, is about 1s. 6d. per yard superficial, free on rail.

Further information may be obtained from the Interloc Construction Co., 43, Shoe Lane, London, E.C.

“BACKBONE” ROADS.

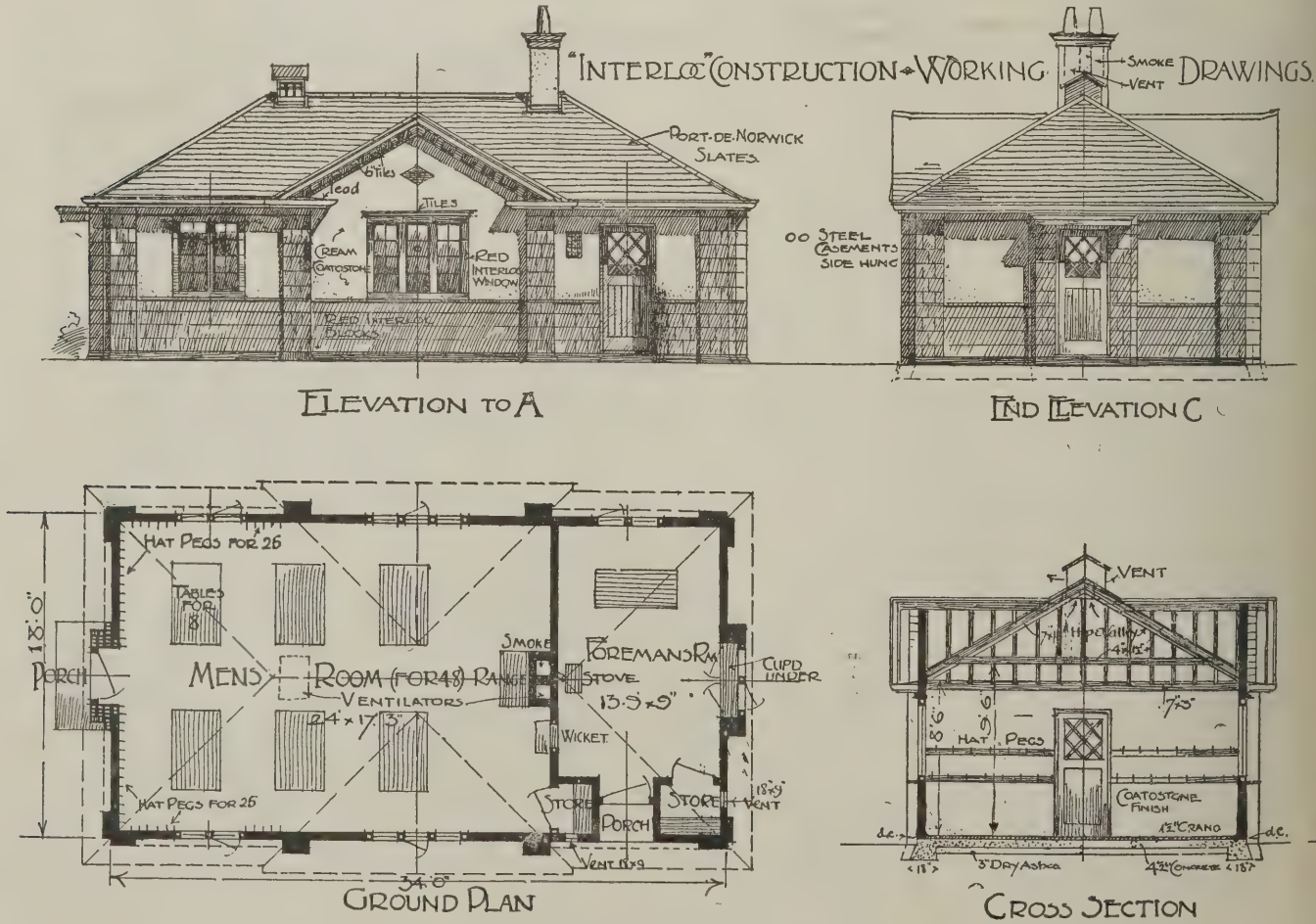
Mr. W. Rees Jeffreys, in the course of a paper read at a meeting of the Town Planning Institute, held at the Surveyors' Institution, considered that there was nothing in the Board of Trade regulations preventing a “backbone” road being laid down in an area where development was likely to be slow. He was informed that in one scheme of development there were seventeen cases in which an owner was cut off from access until his neighbour built, and neither the neighbour nor the Council could be compelled to build until they wanted to do so. The North Circular Road (London) would be twenty-eight miles in length, stretching from Kew Bridge to Woolwich Ferry. Twenty miles would require widening, but only eight miles of new road were needed to make the existing mileage useful as a means of communication. The property required to give through communication would cost £30,000. The examination of four typical schemes of road construction and improvement showed that it was legally possible to use the machinery of town planning for the purpose of arterial roads, especially if the County Councils were given powers concurrent with the public health authorities. He suggested a Town Planning Commission, with powers of initiative; one associated with, but not



COTTAGES CONSTRUCTED ON THE “INTERLOC” PRINCIPLE: ALTERNATIVE DESIGN.

officially part of, the Local Government Board—a statutory authority paid partly by fees and partly by the State—to organise a trained and efficient body of town planners upon which local authorities could draw. The commission itself

could initiate schemes which affected more than a single area. Arterial roads on an average of 100 miles would cost public authorities £30,000 per mile, and only £20,000 per mile under town planning schemes, of which £12,000 would be paid



SMALL CANTEEN AT A COLLIERY. G. E. CLARE, M.S.A., ARCHITECT.



by the landowner and £8,000 by the public. If the State contributed £200,000 a year for special works, fifty miles of arterial roads could be made per year, provided local authorities contributed a like sum and building development justified it. He believed town planning could be made an efficient machine for securing better houses and better roads. Like Mr. Theodore Chambers, he wanted the large towns spread over the rural areas and the rural areas given better communication with the towns. The commission could initiate and prepare schemes for enlarging local areas for particular or general purposes, and there could be conditional sterilising of land for arterial roads for a limited period without obligation on the local authority to construct.

## BOOK NOTICE.

### *Marsh and Dunn's Manual of Reinforced Concrete.*

The original manual of reinforced-concrete construction prepared by Messrs. Marsh and Dunn quickly took rank as a standard work, and has maintained its high position against all rivals, which in recent years have become exceedingly numerous. Terse, practical, and trustworthy, it was an ideal vade-mecum for study or for consultation, and its popularity is proved by the issue of a third edition, re-written, and considerably enlarged by the addition of much useful information and many new tables and diagrams, while the various mathematical expressions have been recast in accordance with the standard notation proposed by the Concrete Institute and adopted by the R.I.B.A. Joint Committee on Reinforced Concrete and by the London County Council in their regulations. Other new matter includes the methods of finding the bending moments on continuous girders; of calculating arches with three and two hinges, and the flat slab or mushroom floor; new diagrams for the design of columns and T-beams; a discussion of electrolysis; expansion and contraction of

structures; and many other useful additions, rendering complete and up to date a compendious and authoritative manual which, having already done excellent service, now enters upon a fresh lease of high utility.

"Manual of Reinforced Concrete." By Charles F. Marsh, M.Inst.C.E., etc., and William Dunn, F.R.I.B.A., Assoc.Inst.C.E., etc. Third edition, re-written and considerably enlarged by the addition of much useful information and many new tables and diagrams. London: Constable & Co., Ltd., 10, Orange Street, Leicester Square, W.C. Pages xvi. + 475, price 10s. 6d. net.

## TRADE AND CRAFT.

### "Empire" Woven-Wire Fencing.

In the editorial columns (page 184) of our issue for April 18 attention was drawn to the enormous waste of timber involved in providing wooden fences for hundreds of thousands of houses. An architect, who has placed orders for "Empire" fencing for dividing gardens, allotments, etc., was good enough to bring our observations to the notice of Messrs. Parker, Winder, and Achurch, Ltd., of Broad Street, Birmingham, who, in forwarding to us a copy of an illustrated catalogue, state that they have supplied a great many miles of "Empire" fencing for this particular purpose.

In this system of fencing, parallel horizontal wires of best galvanised hard steel are securely united at intervals by vertical wires, spaced usually at centres of 22 in., but spacings of 16½ in. down to 6 in. may be obtained to special order. For field fences, the horizontals are set closer together at the bottom than at the top, to keep out small animals. These fences are despatched in rolls, 220 yds., 110 yds., or 55 yds. long, and all that the fixer has to do is to unroll the fencing, strain it with the stretching tools supplied, and then staple it to the iron tubular posts. The wire is of 9-in. gauge throughout, ensuring uniform strength and durability, and the horizontal and vertical wires are secured by an immovable knot, of a form evolved after years of observation and study; this is the best form of

attachment yet devised. Welding, which is entirely absent from this fencing, it is stated in the catalogue, is avoided, as requiring the use of soft wire, which may result in a sagging fence. "Empire" fences are light and strong, and do not obstruct the view. They are adapted to very varied uses, and are made in different styles, for confining live-stock such as cattle (the wires can be doubled, if necessary, to resist violent attacks from big animals such as bulls), sheep, pigs, and poultry, or for enclosing pleasure parks, deer parks, horse paddocks, cricket-grounds, or private grounds or gardens. There are no sharp points to cause injury to man or beast; the wire is rustless and extremely durable. Photographs of the fencing in situ show it to be of quite unexceptionable appearance; and its very extensive substitution for wood palings between the gardens of small dwellings seems a foregone conclusion, even though timber should again be procurable in sufficient quantity and at something like pre-war rates. The accompanying illustration shows "Empire" fencing to a deer park.

## ENQUIRY ANSWERED.

### *Frontage Line Question.*

T. (Bucks) writes: "I enclose plan showing a proposed new munition factory. You will notice the building line as set out for the whole estate is 10 ft. back, and that the existing buildings on each side have been set back a further 10 in. Can the local authority insist upon the new building being also set back to the new line?"

—The question hinges on whether or not the building line as set out for the whole estate has been approved by the local authority. If it has not, they may possibly insist on conformity to the line adopted for the existing buildings. On the other hand, if they have approved of the "line for the whole estate," they cannot logically object to your building up to it. This point should be clearly ascertained by consultation with the local authority.



"EMPIRE" WOVEN WIRE FENCING.



## PUBLISHER'S ANNOUNCEMENT.

**T**HE question of the cost of Advertising is governed entirely by the circulation of a publication. The prices for small Advertisements enumerated below are framed upon the lowest possible basis in order to allow the use of the columns of the Journal for "Wants," &c., at a figure well within the reach of everyone.

Advertisers are purchasing the circulation of a paper in buying space for their announcements, and we are able to announce that "The Weekly Nett Sale of The Architects' and Builders' Journal is larger than that of any other Architectural Journal."

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4 lines (about 28 words) 1s. 6d.; 3 insertions, 3s.

**BUILDER'S** and Contractor's Foreman Plumber and Fitter seeks re-engagement; wide experience on estate and Government works; supervise drainage, water, sanitary, or chemical job; dumpty level; measure all trades; excellent testimonials.—A. Brown, Edenbridge, Kent. 985

**BUILDER'S** General Foreman seeks engagement; carpenter and joiner by trade; good draughtsman and manager of men; good references, etc.; used to new or alterations (large or small), hutments, etc.; able to get work out at competitive prices; town or country.—H., 63, Gartmor Gardens, Southfields, Wandsworth.

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**THE** Association of Builders' Foremen and Clerk of Works, 56, Old Bailey, E.C.—Experienced Foremen and Clerks of Works can be obtained by applying to the Secretary, Mr. J. W. Sawyer, 214, Clapham Road, S.W. Competent foremen and clerks of works are invited to join this Association.

### Appointments Vacant.

6d. per line.

#### ARCHITECTS' WAR COMMITTEE.

The object of the Professional Employment Committee is to provide temporary paid work for British architects who are entirely dependent upon their profession for their living, and whose present difficulties are due entirely to the war. Applications can only be considered from architects who are ineligible for military service and unable to obtain War work of a professional nature. Enquiries should be addressed to the Honorary Secretary of the Committee at 28, Bedford Square, London, W.C.

**WANTED**, competent Builder and Decorator's Clerk; used to pricing accounts preferred.—Box 986.

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On a complete, practical, and highly Successful  
Method by

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Architect and Surveyor, Standard Buildings, Leeds.  
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Note.—Before deciding upon any system of tuition, an intending candidate is invited to communicate with Mr. Neill (who, in addition to many other qualifications, is a Medallist, Honoursman, Prize-man, and Head of the Department of Building at the Leeds Technical School).

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### Miscellaneous.

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**BOOKS.**—Books on Building Trades, Engineering, Educational, Literary, Technical, and all other subjects; second-hand at half prices; new books at discount prices; catalogues free; state wants; books sent on approval; books bought; best prices given. W. and C. Foyle, 121-123, Charing Cross Road, London, W.C.

#### TO ARCHITECTS COMPETING.

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### Miscellaneous.—Continued.



#### CROWN LANDS, LONDON.

**PICCADILLY CIRCUS, BUILDING SITE.**  
The Commissioner of H.M. Woods, Forests, and Land Revenues will be prepared to receive, not later than the 30th June, 1917, **TENDERS** for a **BUILDING LEASE**, for a term of 80 years, of the land at the South-east corner of Piccadilly Circus (adjoining the Criterion Theatre and Restaurant), comprising the sites of Nos. 24, 26, 28, 30, 32, 34 and 36, Regent Street, S.W.1, containing an area of about 6,950 square feet, having road frontages of about 73 feet to Piccadilly Circus, 112 feet to Regent Street, and 52 feet to Jermyn Street, and suitable for the erection thereon (after the War) of shops, showrooms, and offices, or similar buildings. Detailed particulars, plans, conditions, and forms of tender are being prepared and will shortly be obtainable from Mr. John Murray, F.R.I.B.A., 11, Suffolk Street, Pall Mall, S.W.1, or from the office of H.M. Woods, etc., 1, Whitehall, S.W.1. 973

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are favoured with instructions from the Warden and Fellows of Winchester College to **SELL** the above by **AUCTION**, at the **GEORGE HOTEL, AMESBURY**, on **WEDNESDAY**, May 30th, 1917, at three o'clock precisely, in one or more convenient lots.

Particulars, with plans and conditions of sale, may be obtained at the place of sale; at the Bursary, Winchester College; of Messrs. Charles Warner and Kirby, Solicitors, Winchester and Bishop's Waltham, Hants; of Messrs. Pink and Arnold, Land Agents, Winchester; or of the Auctioneers, Winchester.

#### PRISONERS OF WAR IN GERMANY.

The Secretary of the Royal Institute of British Architects, 9, Conduit Street, W., will be glad to receive the names of young architects who may be prisoners in Germany or elsewhere in order to offer them facilities for study and examination.—983.

## The Rebuilding of Belgium.

**E**VERY far-seeing business man knows that the resolutions adopted unanimously at the Allies' Economic Conference held in Paris opened up tremendous opportunities for the future. In order to derive full benefits from the policy to be adopted, it is essential for English contractors and manufacturers to acquaint themselves with all the requirements and conditions affecting their business on the Continent.

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The book contains a useful collection of words and phrases most commonly in use in the building and kindred industries—just those very terms which are most difficult to find when they are wanted. Such a book is practically an essential to every manufacturer and contractor.

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# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MAY 16, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1167.

AN important decision in a pre-war contract case reported in the present issue is a welcome vindication of the law as a well-tempered and flexible instrument, rather than as a rigid and machine-like guillotine-knife. Before the war, Mr. Fraser Wainwright had agreed with the Innholders' Company of the City of London to take over certain land on a building lease. He was to pull down existing houses as soon as the tenancies expired, and to erect new buildings on the site. It was not until June, 1916, that the existing tenancies ran out, and in the following July the Ministry of Munitions issued an order prohibiting building without a licence. The contractor was refused a licence, and therefore could not build; and as the old buildings had been pulled down, no profitable use of the site could be made. This was, of course, unfortunate for the Innholders' Company, who, in this action, endeavoured to recover the rent which would have been due to them under the agreement if the work had gone on. Someone had to suffer, and the action was perhaps inevitable as a means of determining whether the company or the builder should bear the brunt of it. Mr. Justice Ridley, guided by the precedents set in the *Metropolitan Water Board v. Dick, Kerr, and in Campin v. Anglo-Mexican Petroleum Co.*, decided that the contract was suspended by the action of the Ministry of Munitions, and should remain so until the government prohibition was removed. This seems to be a just and reasonable conclusion, and should have the effect of preventing further litigation where the circumstances are similar.

In an article contributed to the "Sheffield Daily Telegraph" of May 8, Mr. W. S. Purchon, Lecturer in Architecture at the University of Sheffield, reiterates his belief that temporary buildings will play an important part in overtaking the housing shortage. They may be a rather desperate expedient; but their virtues are that they can be erected quickly with a minimum of skilled labour; that they can be made soundly hygienic, comfortable and convenient; and that, being removable even more rapidly than they can be put up, they are infinitely preferable to permanent houses that, hastily constructed, and therefore possibly ill-designed and badly built, would remain as so many memorials of exigency, and would in this respect, as well as in their very possibly ill-chosen situation, interfere disastrously with town-planning schemes that have yet to mature. It is evident, therefore, that a good case for temporary housing can be made out, although, in the long run, the proceeding, as Mr. Purchon admits, is not economical in point of cost—the fact, indeed, is glaringly obvious. There are, however, items of higher economy that, in the larger view, may be regarded as a fair set-off. Overcrowding is a bad economy of health and morality, and that may be greatly or wholly discounted by the speedy provision of temporary dwellings; while the wholesale rushing-up of cheap and nasty permanent houses would be, from every point of view, one of the worst things that could happen to the country. It would be a sorry set-back to the town-planning movement, and would by no means tend to the rearing of that sturdy race of self-respecting Britons upon whom the destinies of our Empire so largely depend. Temporary houses will not only meet immediate needs, but will enable us to

gain time and accumulate funds for the preparation and execution of comprehensive and well-considered schemes. If, as seems inevitable, housing is to be done in a tremendous hurry, by all means let us arrange that its effects shall be only temporary.

It is even conceivable that (as Mr. Purchon seems to fear, although he does not expressly say so), in the fury of house-building that must soon ensue, such abominations as back-to-back houses will be permitted. He quotes from one of the annual reports on the health of the city of Sheffield seven good reasons why they should not be tolerated. One objection that the report does not mention explicitly, although it is logically implied in the indictment, is that this is about the meanest way of building ever devised, standing self-condemned on sight. Nevertheless, it has most strenuous advocates, who pour out the vials of virtuous indignation on the heads of all who dare to say a word against it. Consequently a certain degree of courage is to be accredited to Mr. Purchon for his opposition to this undignified method of housing. In Sheffield there are sixteen thousand houses of this type, and the citizens owe it to themselves to prevent the number being augmented. At the present time back-to-back houses may not be built in Sheffield; but we have it in mind that when the rush comes wise counsels are apt to be overwhelmed. In some few other Northern towns, plans of such houses are still admissible; and in times of stress the bad example might be widely followed on the plea of emergency. Vital statistics do not reveal Sheffield as a health resort, except, perhaps, in parts; for while the death-rate in the centre of the city and in the neighbourhood of the works varies from seventeen to twenty-seven, in the remainder of the city it is from nine to fifteen, while the figures for infant mortality vary from 160 in the bad district to 90 in the good. This waste of life, and the unrecorded waste of health and energy to which it is a sure index, is plainly traceable to bad housing, and the loss of so many men in the war renders more imperative than ever the application of the obvious remedy. Mr. Purchon is performing a public duty in bringing the facts to notice in the Press, and we commend his example to other architects and sanitarians, who might well make further use of the local Press to enforce the lessons in citizenship which they may deliver with authority, and not as the scribes.

Dundee housing scheme, of which we published, a few weeks ago, particulars derived from the admirable report drawn up by Mr. James Thomson, the city engineer, from whom an interesting letter on the subject appears in last week's issue, is, we regret to see, meeting with considerable opposition. Dundee Landlords' and House Factors' Association, for example, have issued a manifesto condemning the scheme, mainly—indeed, almost exclusively—on financial grounds. It is represented that "There is excluded from the expenditure the annual feu-duty and the provision of roads," and it is contended that "the proposal to charge this to city capital account amounts to placing a large share of the cost on the general body of the ratepayers for the relief of a privileged few." Exactly the same argument was used when national education was a new idea, and it is still occasionally



employed, more especially by persons whose children are being inexpensively educated at endowed grammar-schools. To clinch the matter, it is added that "housing should not be dealt out to one section of the community in the form of charity at the expense of a considerable number of their fellow-citizens already bending under the strain of taxation levied on them." It is the old and wearisomely reiterated complaint of the overburdened taxpayer, whose inability to think out a problem in any other terms than those of narrow self-interest is the despair of the social reformer. It is beyond the comprehension of these good people that for every penny that is wrung from them in the interests of the community they are repaid a hundred-fold in the ensuing common benefits.

It is they (not the ratepayers of Dundee, but "overburdened ratepayers" generally) who will reap the advantage of rescuing their towns from the horrors of slumdom. It is they who will be the healthier and the happier because they are helping—very unwillingly it would seem—their less fortunate fellow-citizens to live more wholesomely and more usefully. It is they who will be ultimately the richer, because they are helping to promote health and energy and efficiency in the nation's workers—helping to minimise the outlay on hospitals and poor-houses, police and jails. It is they who will clear their consciences of the burden of responsibility which must depress them whensoever they comprehendingly cast their eyes on the unlovely evidences of unenlightened industrialism. It is they also who will breathe the physically and morally purer atmosphere which they ought to be proud to assist in creating. Dundee is not to be redeemed "for the relief of a privileged few," any more than it is to continue sordid for the relief of a privileged few. It is to be made a better place to live in and to work in for the incalculable (and therefore insufficiently appreciated) advantage of the entire community—not of Dundee alone, but of these islands. For if it is true that no man liveth or dieth unto himself alone, the truth is equally applicable to a city. In so far as the Dundee landlords and house factors argue and act in a contrary sense, they will be doing themselves and the community a grave injustice, by ranging themselves among the reactionary forces, which, in the interests, not of a privileged few, but of our country, must be always and everywhere opposed and repulsed.

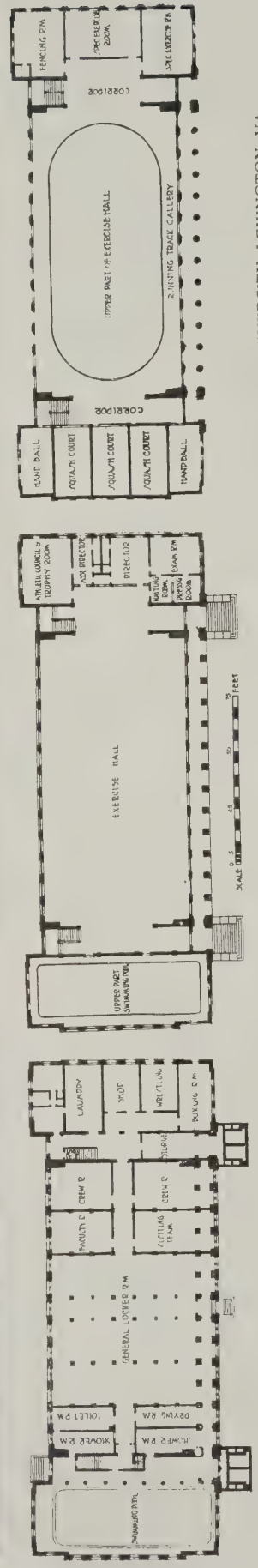
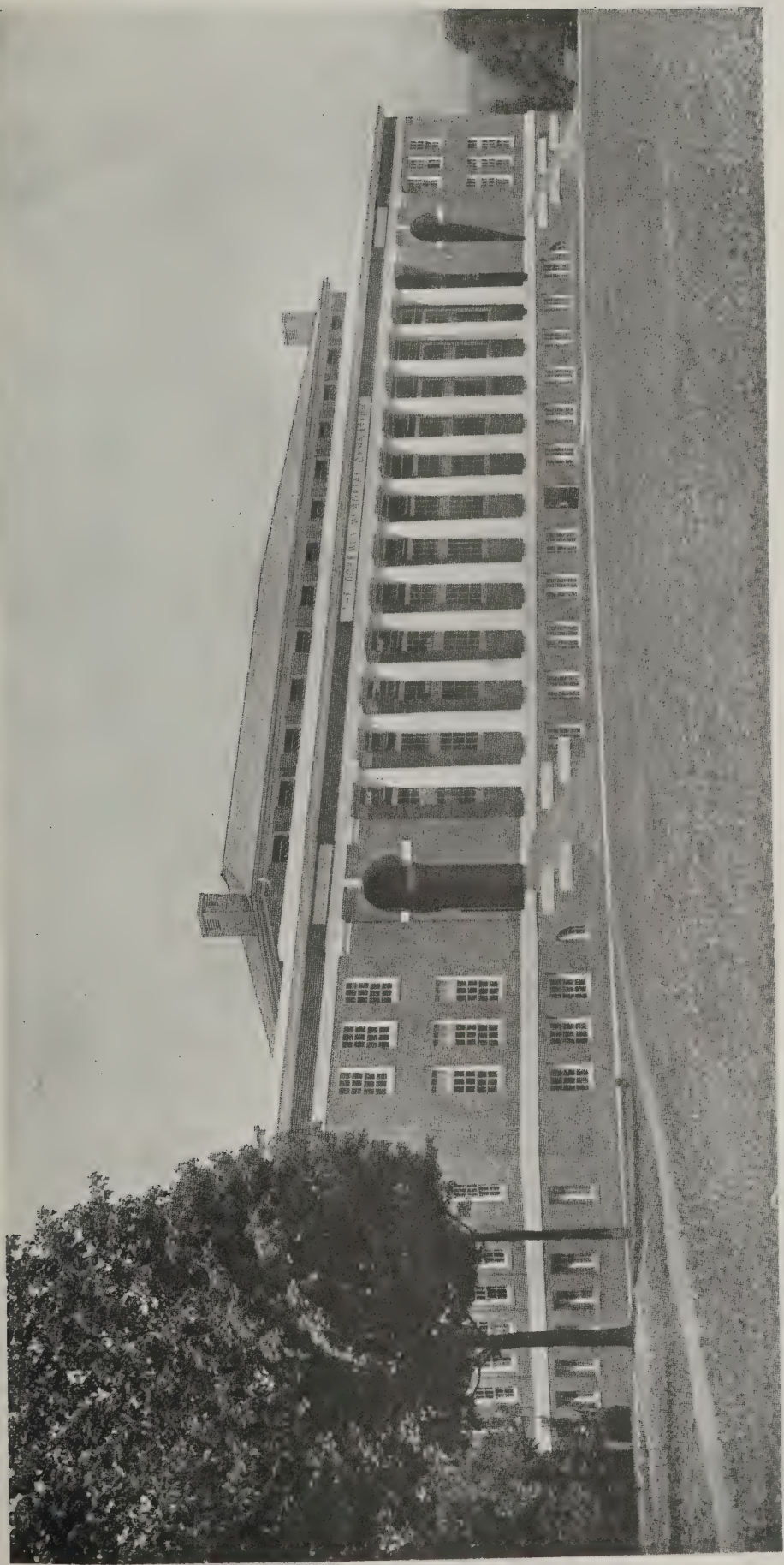
Herr Ihne, the Prussian Court Architect, being dead, the German Press, with its customary lack of decency, is roundly abusing his memory. He was, say the organs of Prussian opinion, "at bottom more of an official than a real artist." He "was no creative force," but his buildings might have had an imposing effect if "a Will whose origin one does not know" (surely this affectation of ignorance is an aspersion on the Hohenzollern ancestry) had not driven him to all kinds of extravagances of decoration. His Prussian Royal Stables, Kaiser Friedrich Museum, and Royal Library are cited as proofs of his lack of "creative force." But what could be expected from a Prussian Court Architect, working always within the broad black shadow of the All-Highest meddler and muddler? And, in any case, "creative force" is the last and least attribute of the Huns, their genius being mainly concentrated on destruction. If they ever had any originality it has been all dragooned out of them. As long as they were content to copy foreign work (spoiling it utterly where they ventured to modify it) they produced fairly respectable architecture. From the moment that they began to scorn foreign influence, their work, as an expression of their own true inwardness, necessarily became frightful, and has rapidly gone from bad to worse, its latest phase being sheer barbarism. A tame Socialist German organ observes of some of the

designs attributed to Ihne, "One feels that these are the experiments of an autocracy, which can no longer be creative." This ricochet shot at the Kaiser carries farther than the writer intended. It hits the whole German race. There is an autocracy of peoples, as well as of individuals. Art is humble, receptive, assimilative, before it can be creative; and the Germans, deliberately fostering the vices that are directly opposed to these virtues, have put themselves beyond the pale of morality in art as in ethics. Their later works are so many monuments to depravity; and from this category Ihne's work, as tinkered by the omniscient Kaiser, cannot be fairly excluded.

Of the four Scots universities, two—those of Edinburgh and Glasgow—are without chapels; St Andrews and Aberdeen being free from this reproach. For evidently it is felt as a reproach in Edinburgh whatever may be the view in Glasgow. At Edinburgh a committee appointed to deal with the subject has drawn up for the consideration of the University Council a report in which it is proposed to build, at an estimated cost of about £80,000, a chapel to accommodate about 800 persons. As the times go, this is a rather daring project, because expense is not the only consideration. What of the spirit of the times, and of the modern conception of the functions of a university? As a relic of monastic or collegiate life no university is complete without its chapel, which indeed, was absolutely indispensable to an isolated community that was primarily religious and only incidentally scholastic. In 1582, when Edinburgh University had its beginnings, this old tradition must have been still strong, but it seems to have weakened when, between 1789 and 1834, Robert Adam designed and W. H. Playfair modified the Palladian-Grecian buildings as we now know them—except that the dome was not erected until 1884, when it was added as a memorial of the tercentenary celebrations. A classical chapel would be, in point of style, less of an anachronism than the Gothic chemistry room upon which we found occasion to comment a few weeks back; but we very much doubt whether, as a matter of educational policy, it would not be better to extend the science accommodation at Edinburgh, rather than to build a chapel that, be it planned never so wisely, shall hardly reconcile the rich and manifold diversities of creed for which Scotland is unrivalled and unenvied and for which there is ample provision in the various chapels and churches (to say nothing of cathedrals) not more numerous than noble, for which the Scottish capital is justly famous.

As recorded on a later page, Birmingham City Council has passed an exemplary resolution with respect to housing and town-planning. In effect, it has been decided that housing and town-planning should be the care of one committee—the town-planning committee is to be also the housing committee. So obviously inseparable are the two things that the only ground for surprise is that there should ever have been any question of divorcing them. Of course, it was never intended—at all events in Birmingham—that housing and town-planning should be dealt with as separate entities, but only that they should be dealt with by separate committees. This, however, would have been a most inconvenient arrangement, which must occasionally have led to overlapping and friction and we are glad to see that Birmingham has set an example that, we trust, will be generally followed. That town-planning ought to include the control of housing should be an established principle. If the one is anywhere to proceed independently of the other, the two things may easily be mutually destructive, or at least mutually obstructive.





MODERN AMERICAN ARCHITECTURE. (SERIES II.). XXXII.—DOREMUS MEMORIAL GYMNASIUM, WASHINGTON AND LEE UNIVERSITY, LEXINGTON, VA.  
FLOURNOY AND FLOURNOY, ARCHITECTS.







MODERN DOMESTIC ARCHITECTURE (SERIES III.). VII.—No. 90A, HARLEY STREET, LONDON, W.

SIDNEY J. TACHELL, F.R.I.B.A., ARCHITECT.







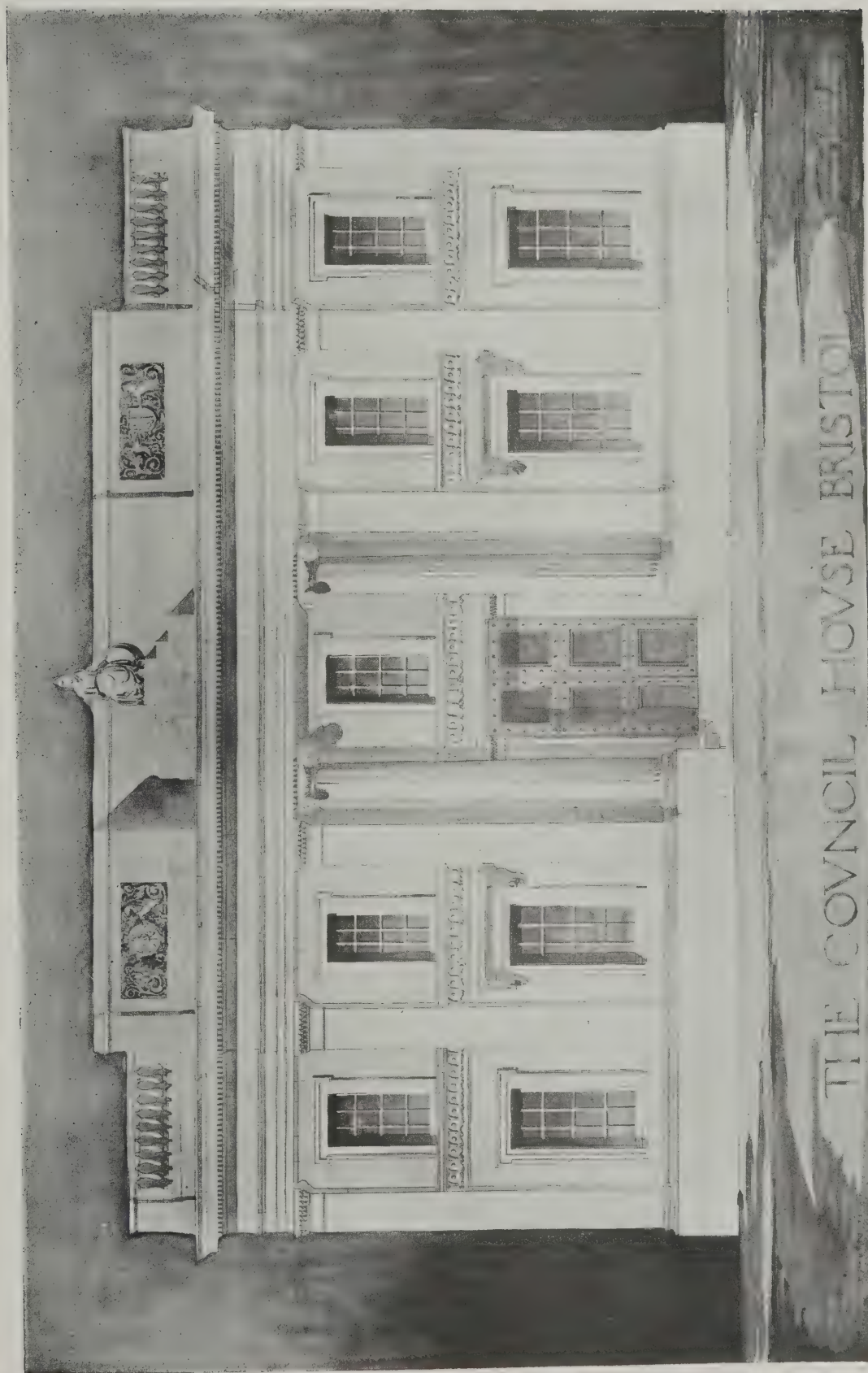
Detail of Ionic Capital in Entrance Hall.



Detail of Ceiling over Stairs.







STUDENTS' DRAWINGS (SERIES II.). XLVI.—THE COUNCIL HOUSE, BRISTOL.

BY A. CLIFFORD HOLLIDAY.





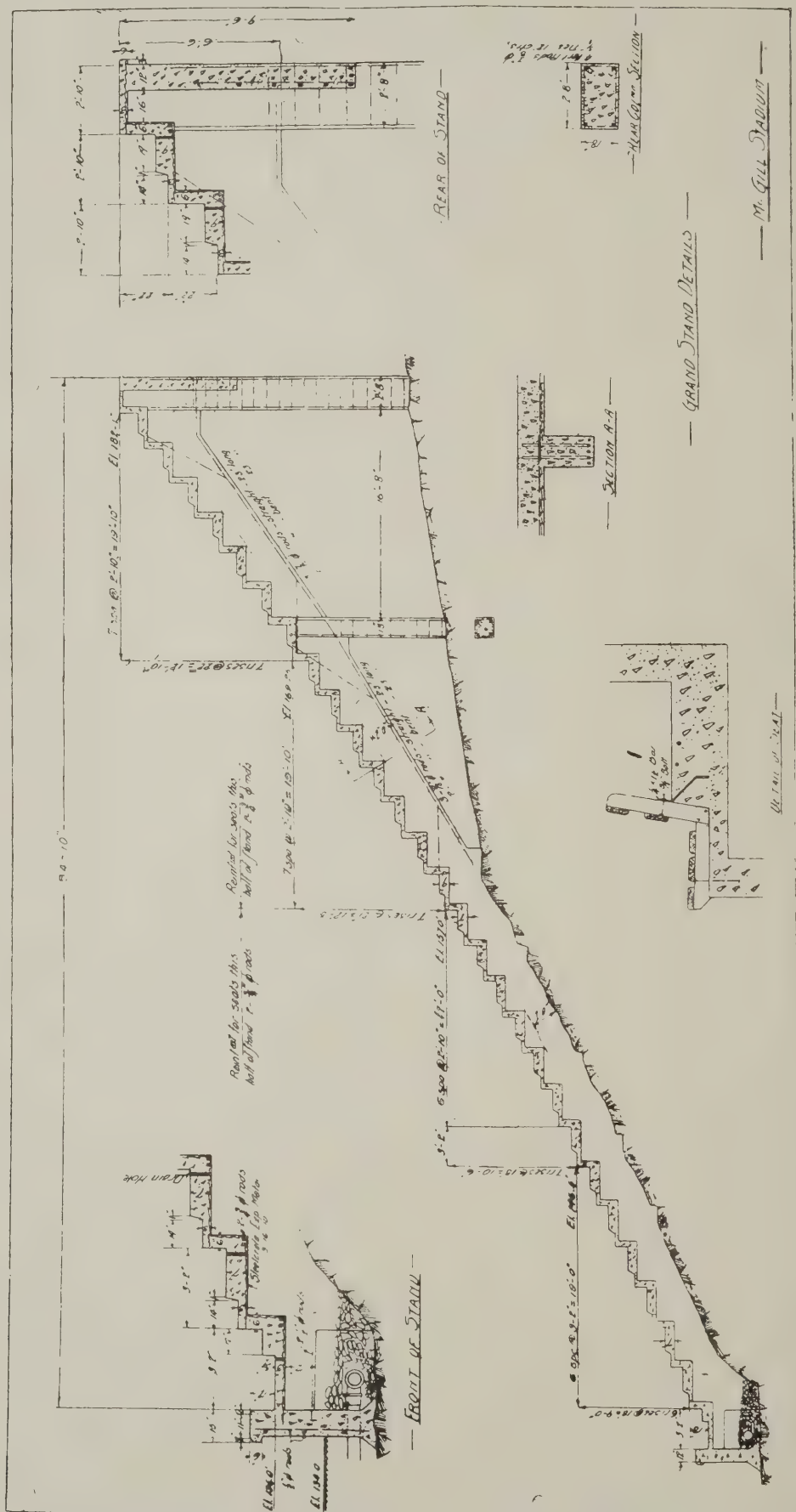
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## THE PLATES.

*The Doremus Memorial Gymnasium, Washington and Lee University.*

THIS building was erected as a memorial to the late Robert Parker Doremus, of New York, on a site near the western corner of the campus. It stands on a high bluff, and the open colonnade between the two main entrances commands a wide view across the athletic field and the valley of the North River. The gymnasium was designed to harmonise with the older university buildings, which are of the early nineteenth century. It is of red brick, with cement stone trimmings and a wooden cornice. The main rooms are finished in white brick, the offices and other small rooms in sand-finished plaster. The floors are of maple, white terrazzo being used in toilets, showers, and swimming pool room. Our illustrations and this description are reproduced by courtesy of the "Architectural Forum and Brickbuilder." Messrs. Flourney and Flourney were the architects.

*No. 90a, Harley Street, London, W.*

This maisonnette has been erected on a portion of the site of the house that was at one time occupied by Miss Florence Nightingale. It is faced with Portland stone. Mr. Sidney J. Tatchell, F.R.I.B.A., was the architect.

*No. 9, Clifford Street, London, W.*

Judging from the entrance hall, which, with its staircase, is the only portion that remains in anything like its original form, No. 9, Clifford Street, must have been a house of some importance. In date it belongs probably to the middle years of the eighteenth century, but, as may be judged from the details reproduced on the plate in this issue, it still preserves the robustness

and vigour of the work of the preceding century. The whole design of this Clifford Street house suggests the hand of Isaac Ware, who belonged to the older generation of eighteenth-century architects. Documentary proof of his authorship is, however, lacking.

*Stadium at McGill University, Montreal.*

The McGill Stadium, recently completed, marks the initial step in the development of the property presented to the University by Sir Wm. McDonald in 1911, and now known as McDonald Park. This property, situated on the slope of Mount Royal, extends east and west from Pine Avenue to the Incline Railway, and north and south from Fletcher's Field to University Street, and covers an area of about 25 acres. The projected development includes the erection of gymnasium, armoury, and skating rink adjoining Pine Avenue. To the rear of these buildings and covering the central portion of the property is the stadium. As the old university campus had become inadequate for the growing athletic needs of the university, the Graduates' Society agreed to undertake the building of the new stadium, and appointed a committee under whose supervision plans were prepared and the contract for the work let in July, 1914. It was the original intention to have the playing field completed for the fall of the year, but the outbreak of war led to a change of plans and deferred the completion of the work to September, 1915. The area reserved for stadium purposes is roughly oval in shape, with extreme dimensions of 750 by 400 ft. The layout includes a quarter-mile cinder track, inside which lies the playing field; on the south-east side of the track is a parking space for automobiles, 48 ft. wide by 450 ft. long, and on the north-west side is the reinforced concrete grand stand, with a seating capacity of 8,300. A driveway and sidewalk encircle the whole stadium.



DOREMUS MEMORIAL GYMNASIUM, WASHINGTON AND LEE UNIVERSITY, LEXINGTON, VA.

FLOURNOY AND FLOURNOY, ARCHITECTS.



At each end the sloping banks between the sidewalk and running track are reserved for future grand stand extension, allowing for an ultimate seating capacity of about 20,000. The site available for stadium purposes was on a sloping hillside, the level of the ground varying from about elevation 120 at the south-east side to elevation 175 at the north-west side. The level of the finished field was fixed at elevation 134, and it was necessary to build a retaining wall along the south-east side up to this level, filling in the space behind same. On the upper half of the site the excavation had to be carried into the side of the hill the necessary distance to give the area required for the field and track, and the side of the excavation sloped off to allow the necessary space for the building of the grand stand. The finished grade of the road at the rear of the stand was at elevation 180, and the back of the stand is two feet above this level, the entrances to the stand being directly from the sidewalk level. The road level along the front of the retaining wall is at elevation 123, and the road encircles the end of the stadium, rising on a maximum grade of 9 ft. per hundred to the required level at the rear of the stand. Our reproductions are made from the "Contract Record."

#### *The Council House, Bristol.*

The Council House, Bristol, was built by Sir Robert Smirke, R.A. (1781-1867), who was a pupil of Sir John Soane. Smirke carried on a large London practice in the first quarter of the nineteenth century, his greatest work being, of course, the rebuilding of the British Museum. The Council House, Bristol, is perhaps his most ornate building. It stands on a corner site, and reveals Smirke's ability to impart monumental dignity to a comparatively small building. Our reproduction is made from a drawing by Mr. A. Clifford Holliday.

### HIPPOLYTE J. BLANC, ARCHITECT.

MR. THOMAS ROSS, LL.D., F.S.A.Scot., contributes to the current issue of the R.I.B.A. Journal an interesting memoir of his friend the late Hippolyte J. Blanc. "I have always felt," Dr. Ross writes, "that while he lived I had a friend on whom I could rely, and my experience, as I know, is not a solitary one—he was ever kind and generous."

Blanc was born in Edinburgh in 1844. His father, Victor Blanc, from Avignon, became a naturalised Scotchman about 1845; his mother was an Irish lady, but he always regarded himself as a Scotchman, and was proud of his old Heriot School, where he was Dux Medallist in 1859; and in late years he gave the school £500, and was the joint author of a well-illustrated historical and descriptive account of this institution. Probably the influence and charm of this old building kindled the interest which he afterwards took in mediæval architecture, and especially in that of Scotland. Nothing delighted him more than to lead a large company of visitors over some ancient building, and he would take any amount of trouble to make the visit a success; consequently he was in great request amongst learned societies in this capacity.

Blanc served his apprenticeship with Mr. David Rhind, an architect of the Classical School, some of whose works—such as the Commercial Bank of Scotland, the Life Association Insurance Offices, in Princes Street, and Stewart's Hospital, all in Edinburgh—confer considerable distinction on his name. From this he passed in 1865 to H.M. Office of Works as first assistant, where he remained four years, when he commenced business on his own account. During these years he made himself very familiar with the important ancient buildings in Scotland, then under the care of the Crown. This was to him most congenial work, and when the opportunity came in 1885, by the muni-

ficence of Mr. William Nelson, to restore the Great Hall of Edinburgh Castle, Mr. Blanc was well qualified to carry out this great work. The Hall had been degraded almost beyond recognition, having been divided into three storeys with numerous apartments on each. The work in a great measure consisted in clearing out all these obstructions—with the lath-and-plaster ceiling, which concealed from view the fine old oaken roof—and restoring the old windows, greatly knocked about, to their original form. The old fireplace had been completely destroyed, and this the architect had to design, taking for his example the fine large fireplace in Borthwick Castle, near Edinburgh, and with conspicuous success. The colour scheme of the Hall he personally worked out on a large scale drawing. I remember seeing him engaged on these. The first sight of this Hall was quite a revelation to visitors to the Castle, as its very existence had been almost forgotten. (Its dimensions are 84 ft. in length by 30 ft. in breadth and height.) He, at the same time, added the top storey to the Argyll Tower. This was done in ashlar work, roof as well as walls, so as to discriminate the new work from the old rough masonry. I may here give an instance of the thoroughness of his survey of the Castle. When the remains of the Great Tower, built by David II. in the fourteenth century, and knocked down in the siege of 1573, were discovered a few years ago, it stands to the credit of Blanc that many years before this he had pointed out in the "Transactions" of the Architectural Association the exact position of the tower, and indicated certain buildings, then in use, as part of the same. This information only came to light after the ruins had been cleared out.

Blanc was ambitious, a tireless worker, and rose rapidly in public estimation as an architect, so that work flowed in to him which might have satisfied a less aspiring man, but not so with him; he boldly entered the field of battle and engaged in competitions great and small, public and private, and, to the advancement of his reputation, he very often came out first. He was a skilful draughtsman, and knew well the art of showing his designs to the best advantage.

There is a tide in the affairs of men, and with Blanc it was running high when he gained the competition for the Thomas Coats Memorial Church, Paisley, in 1885. It belongs to the Baptist denomination, and having seen the various designs submitted I think it not unlikely that if the decision had been left with the competitors with two votes each the result would have been what it was. This is his most important work, and Scottish readers especially will appreciate its scale when they know that it covers an area of about the same as the cathedrals of Dunkeld or Kirkwall, or the parish church of Haddington, and is slightly larger than the churches of Linlithgow or Stirling.

Blanc was architect of a large number of churches throughout Scotland, many of them of considerable importance—for example, St. Cuthbert's, beneath the north-west side of the rock of Edinburgh Castle, occupies a conspicuous position at the west end of Princes Street Gardens.

Besides churches Mr. Blanc had a very wide experience in designing buildings for very various purposes, such as mansions, cottages, villas, street architecture, club-houses, farm-steadings, breweries, halls for various purposes, banks, libraries, schools, monuments, and what not. Perhaps the most important of these, as combining something of them all, was the Bangour Village Asylum, situated some fifteen miles to the west of Edinburgh, and gained by competition. It was decided that this should not be one large single building, but a segregated series of buildings, planted on an area of 150 acres. There are from thirty to forty detached buildings, including many wards for patients of different classes and stages of treatment, residences



for all the various officials and servants, private patients, dining-rooms, recreation-rooms, administrative quarters, power stations, schools, churches, stables, and so on. These are scattered about in a narrow valley through which a burn flows. The whole scheme with roads cost about £237,000. It will be readily seen that the carrying out of such an undertaking required no small amount of experience and knowledge.

Of his street designs reference may be made to the New Café, Princes Street, and No. 60 in the same division, and to the Ladies' College in Queen Street, for the Merchant Company. Only the eastern part of this has been erected, and it was about the last important work of his life. It was evidently designed to present a front to the street in harmony with the large building on the opposite side. In partnership with his son, Mr. Frank Ed. B. Blanc, he also designed a restaurant and block of offices in Coventry Street, London, costing about £30,000.

He was architect for several mansion houses, that for Sir Thomas Glen Coats, near Paisley, being perhaps the most conspicuous. It is an exceedingly picturesque house in the style of the kind of mansion so frequent in Scotland in the sixteenth and seventeenth centuries, and adapted to suit the requirements of modern times.

He designed many memorials of a private and public kind. Of the latter, that to King Alexander III. at Kinghorn, on a rocky cliff where the monarch met his death in 1286, is in the style of some of the simpler Eleanor Crosses, and must be well known to many from the passing sight of it from the railway.

Mr. Blanc was prominent in all public affairs connected with art. He was appointed Deputy President and Treasurer of the Royal Scottish Academy in 1907, and was a constant exhibitor there and a frequent one at the Royal Academy, London, the Salon, and other exhibitions. He was thrice President of the Edinburgh Architectural Association.

## THE UNITY OF HOUSING AND TOWN-PLANNING.

AT the quarterly meeting, held last week, of Birmingham City Council, Alderman Sir William Bowater brought forward the report of the General Purposes Committee, and proposed, as reported in the "Birmingham Post," "That as from June 1, 1917, the Public Health and Housing Committee (in future to be designated the Public Health Committee) be relieved of the powers delegated to them by the Council under the Housing of the Working Classes Acts, 1890 to 1909, with the exception of those contained in Sections 14, 15, 16, 17 (1), and 36 of the Housing and Town-planning Act, 1909 (operations under the latter section being carried out in conjunction with the Housing and Town-planning Committee); that as from the same date the Town-planning Committee, with the addition of Alderman Lovsey and Councillor Harper, do constitute the Housing and Town-planning Committee, and that the number of members of the new Committee be varied accordingly." He said that in October, 1914, the Housing Enquiry Committee presented a valuable report to the Council, which was adopted. Among other things, it contained a suggestion that a separate Housing Committee should be formed. The Council, however, subsequently decided that that resolution should be suspended, and no special Housing Committee should be constituted until they had arrived at normal times. But the situation was more acute now. It was estimated there was a shortage of from 15,000 to 20,000 houses in the city, and it was impossible for that shortage to be met at present either by public action or private enterprise. The Housing Enquiry,

Public Health and Housing, and Town-planning Committees had met in conference, and had come to the unanimous conclusion that it would be wise to form a Housing Committee to prepare schemes so as to be ready to carry them into effect as soon as the national conditions allowed. It was realised that if a separate committee was appointed the Town-planning Committee had so much to do with the work that overlapping would result, and so the conference made certain recommendations, which the General Purposes Committee adopted, and he now submitted them to the Council for approval. The idea was that the Town-planning Committee, with the addition of two other members, should form the Housing Committee and carry out the work in conjunction with their work of town-planning, and that the few sections of the Act that related to sanitary work only should remain as part of the duties of the Public Health Committee. In voting for the recommendations the Council would not pledge themselves in any way to any policy in regard to housing. Probably the first duty of the new Committee would be to formulate a policy of housing, but before it could be carried out it would have to receive the sanction of the Council.

The resolution having been seconded, Mr. Stephenson urged that the proposal was a reversal of the policy adopted in October, 1914. The pressing need of the city was the provision of a large number of new houses, and he thought that was distinct from town-planning and should be dealt with by a separate Committee. It would be a grave menace to the success of town-planning if the latter were mixed up with the economic, political, and Socialistic question of the erection and ownership of dwellings for the working classes.

Alderman Lovesey said the housing question was so closely allied to the principle of town-planning that the one should not be divorced from the other.

Sir Henry Manton could not conceive what town-planning had to do with what was purely a sanitary question. The Housing Committee had addressed themselves to the purification and renovation of a certain class of property which they deemed insanitary, and that Committee was added to the Health Committee because there was a certain amount of dissatisfaction over the extreme measures which they had taken.

Mr. George Cadbury, jun., supported the resolution, saying he was impressed by the absolute need of some scheme which would provide houses as soon as it was possible to build them. It was because of that necessity that the Conference was held to see how the matter should be dealt with. At the present moment no Committee was in a position to act. The Housing Enquiry Committee had suspended its proceedings, and the Town-planning Committee were not in a position to act because the Housing Enquiry Committee were in being, and as long as that was so they did not consider it was their business to formulate a policy. The resolution before the Council was the result of the decision of the Conference that all housing matters should be entrusted to one Committee. If a separate Committee were set up there would be overlapping with the Town-planning Committee, and that would be objectionable. But in adding the work to the Town-planning Committee there would be no overlapping. As chairman of the Town-planning Committee he saw no difficulty in Dr. Robertson and the City Surveyor being called in to advise two Committees. It was a common practice for an official to serve two Committees.

Alderman Sir William Bowater remarked that the question under discussion had been referred to as a sanitary question, but he thought they looked to the new Committee to carry it far beyond the ordinary meaning of that term.

The report, with a slight amendment, was adopted.



## SHEFFIELD'S HOUSING PROBLEM.

Mr. W. S. Purchon, M.A., A.R.I.B.A., Lecturer in Architecture at the University of Sheffield, writing in the "Sheffield Daily Telegraph," insists that Sheffield's housing problem is twofold. First, there is the necessity for dealing promptly with the extremely urgent demand for additional dwellings, a demand which cannot be met by after-the-war measures. Secondly, there is the great problem of the development of the future Sheffield. Towards the solution of this problem investigations may well be made, and possibly schemes outlined, during the war; certainly during the plastic period through which we are now passing, every possible effort should be made to lead public opinion in the direction of reform, but the actual necessary destructive and constructive work can only be carried out in more peaceful times. Let us take the second problem first, and try to realise in some measure the magnitude of the task so far as housing is concerned.

The key to the situation is to be found in the annual reports on the health of the city of Sheffield for the years 1913, 1914, and 1915. In the first of these reports, issued in the early days of the war, housing is dealt with at considerable length, and attention is drawn to the following points:

(1) Even at that date there was a serious scarcity of houses, an increase in the number of cases of overcrowding, and the difficulty in obtaining houses was already becoming acute.

(2) The number of houses built had steadily declined from 2,876 in 1900 to 542 in 1913, a fact which led the Medical Officer of Health to urge the necessity for the "undertaking of a far bigger programme of building low-rented houses than has ever been hitherto contemplated."

(3) Out of the 107,288 dwelling-houses in the city, 16,000 are of the back-to-back type. In the report the following objections are raised to this type of house: (a) Lack of adequate ventilation. (b) Temptation to tenants in front houses to throw their refuse on the streets. (c) The staircases are very awkward. (d) The houses are considered more dangerous in case of fire. (e) It is seldom possible to have a food pantry ventilated to the open-air. (f) The vapour from washing is difficult to get out of the house. (g) The sanitary conveniences are usually in a block in the court behind the houses, with, in many cases, one w.c. for two houses.

The report states that "The common yard, with the mixing up of all the families who have a right to use it, must facilitate the spread of infectious ailments, and it is impossible to think that the use of a w.c. in common to two families does not aggravate this risk."

(4) An interesting map issued with this report shows that the death rate in the centre of the city and in the neighbourhood of the works varies from 17 to 27, while in the remainder of the city the death rate is from 9 to 15. The figures for infant mortality are even more striking, being approximately 160 and 90 respectively.

The report for 1914, dated September, 1915, shows, as may be expected, that little had been done to improve matters, and that the scarcity of houses had become greater than ever. This report also shows that out of some 77,000 sanitary conveniences in the city, about 11,000 are of the privy type with fixed receptacles. The report for 1915 states that after converting 1,538 of these, this work was suspended in accordance with the wish of the Government. Much more might be written in condemnation of the type of house to which reference has been made, but possibly the

matter is best summed up in the fact that it is considered so bad by the authorities that houses of this type may no longer be built in Sheffield.

In the present temper of the nation, this kind of thing cannot possibly be considered as liable to continue indefinitely, and it seems extremely probable that in the course of the next few years some 16,000 out of the 107,000 houses in this city may be condemned as unfit for habitation. This brings us at once down to hard facts, for on this ground alone preparation should be started at the earliest possible moment for a scheme for erecting some 16,000 dwellings. Many of these houses are in the area in which works and other extensions will be needed, but it will probably be wise to assume that 4,000 uncondemned houses may also have to be cleared away for this purpose. This gives us an approximate figure of 20,000 houses which will probably have to be provided for these two reasons alone, without making any provision for dealing with the already serious overcrowding, for natural increase of population, or for the growth of the city. In this connection it may be pointed out that in 1915 there was a great increase in the marriage rate, the figure reached being considerably higher than in any previous year. It seems, therefore, no exaggeration to state that any comprehensive scheme of housing for this city must make provision for the gradual erection of 40,000 houses.

I do not like temporary houses, but, all things considered, in the present emergency they are, I am convinced, the best for the purpose. This is no time for the erection of a large number of well-built houses. Temporary ones may not be very much cheaper, but they are vastly more economical at a time like this, when skilled workers and first-class materials are wanted for even more urgent requirements. Temporary houses at a time like the present are also vastly superior to permanent ones, for the reason that they can be erected and ready for use in far less time. The final argument is that it is barely possible to put up, without serious delay, a considerable number of permanent houses which would fit in with the great scheme which I have ventured to outline for the future development of the city. We may not be able to get even temporary houses now, but we must not expect permanent ones.

## AN EXHIBITION OF POTTERY AND DECORATION.

At the galleries of Messrs. H. H. Martyn and Co., Ltd., 5, Grafton Street, W., an exhibition is being held of pottery and domestic decoration by Mr. Alfred A. Wolmark. Mr. Wolmark's work is of a very individual kind. While obviously owing something to those forms of art which are commonly denoted by the terms "Cubism" and "Futurism," it is neither the one nor the other, and escapes the absurdities of both. Mr. Wolmark's art consists in the application of colour in a variety of patterns. Some of his designs are regular, almost geometrical, while others have the character of patchwork—irregularly formed shapes combining and interlacing in a singularly attractive manner. Mr. Wolmark's work, although remarkable for its brilliant colouring, has a quality at once decorative and dignified. We understand that he is not responsible for the actual design of the vessels on view, all of which, however, are of a most graceful type. At Messrs. Martyn's premises Mr. Wolmark has designed the decorative scheme of a whole room—a work of very considerable interest.

## A PRACTICAL BOOK ON THE ITALIAN ORDERS.

Really practical books for students of architecture are not plentiful, and Professor Gourlay has done well by adding to them "The Italian Orders of Architecture." This is, in effect, a careful interpretation and adaptation of the principles enunciated or illustrated by such masters as Vignola, Palladio, Gibbs, and Chambers. He has had the rare courage to avoid mere copying of examples, and to make his models eclectic. This is in itself a practical expedient, since it is what is done in the actual work of designing. As a painter or sculptor, finding no human model perfect, may combine the head of one with the body or limbs of another, so the architect adopts what is meritorious and avoids what is faulty in the works of the masters, and that is the course that has been pursued in preparing these plates of the Italian Orders. In less skilful hands than those of an experienced teacher like Mr. Gourlay, the adventure would be perilous, but a glance through the plates convinces us that his selection of details has been invariably judicious, and vindicates the principle he has adopted. He realises that, as he states in his preface, "proportion is the essence of architecture," and, without committing ourselves to this rather sweeping assertion, we are prepared to admit that a sense of proportion can and should be sedulously cultivated, and that any means to this end is to be cordially welcomed. Whether or not the triple scale, showing inches, minutes, and centimetres, appended to each plate, will be of much assistance towards this object is mainly a question of temperament. With some the sense of proportion is instinctive, and to these the scales might even prove a hindrance with respect to this particular purpose, while, however, serving for other uses for which they are indispensable. With others, proportion is not apprehended on sight, but is—at least at the outset—a matter of careful measurement and comparison of parts, leading up, in very many instances, let us hope, to the acquirement of a faculty in which the great majority of people, including far too many architects, are conspicuously deficient.

There are in all thirty-two plates, illustrating, in elevation, plan, and considerable wealth of detail, the Tuscan, the Doric, the Ionic, the Corinthian, and the Composite. Thereafter, successive plates show entablatures, pilasters, carved enrichments on mouldings, doors and windows, balustrades, arcades, colonnades, superposition of columns and arcades, domes, ceilings. Just the sort of guidance required by the beginner is afforded in the terse and businesslike text in which the plates are described; it tells him what to look for, how to analyse what he sees, and with what other work it is to be contrasted or compared. In this way knowledge is gradually accumulated, and taste developed, and all in a natural and an agreeable way. We are disposed, therefore, to recommend this book very strongly as an aid to architectural education, ably and methodically devised by an expert architectural educationist.

"The Italian Orders of Architecture." A Practical Book for the Use of Architects and Craftsmen, consisting of letterpress, with 32 plates based on the Orders of Vignola, Palladio, Gibbs, Chambers, and other Masters. By Charles Gourlay, B.Sc. (Glasgow University), Architect, A.R.I.B.A., F.S.A. Scot., etc. Professor of Architecture and Building in the Royal Technical College, Glasgow. Pages viii. + 32 + 32 plates, 9½ in. by 12½ in., price 6s. net. London: Edward Arnold, 41 and 43, Maddox Street, W.





## WAR BUILDINGS SECTION

### REINFORCED CONCRETE AS A WAR-TIME BUILDING MATERIAL.

BY H. R. STROYER, M.Inst.C.E. (Copenhagen).

(Concluded from page 70, No. 1152.)

BEFORE going into details of the various types of beams, slabs, or blocks that have been put on the market with a view to reducing reinforced concrete from a plastic material to the stock unit, ready for use immediately it is erected, it may be useful to examine the conditions these units have to fulfil in order to make the integral as nearly as possible a monolithic reinforced concrete structure. One of the greatest advantages of reinforced concrete is the continuity and monolithic character of the material, known by the way it distributes and transmits any local forces acting upon it, so that practically all members of the structure become interested in resisting forces applied to any one particular member.

The first demand on the units employed as a ready-made material, must therefore be that they should be able to afford, as nearly as possible, the same distribution and transmission of forces as the cast-in-place concrete. Apart from this, each in-

dividual unit must, of course, be designed so as to be strong enough in itself to resist all the forces that will be acting on it. Further, the fire, water, and weather resisting qualities of the material must not be impaired by the use of ready-made units.

The external forces generally known to be acting on any section of a structure are compression, tension, shear, and bending, and it is comparatively easy to design each individual unit strong enough to resist these forces. The transmission of the forces from unit to unit is a much more difficult matter to arrange satisfactorily, and this point should not be overlooked when examining the merits or otherwise of any system of unit construction.

In some cases beam or slab units are made long enough to bridge over the whole span in one length, and there is therefore no need for any bonding or distributing devices for the units longitudinally, the distribution or transmission sideways from unit to unit is generally effected by forming grooves in the sides of the units and pour-

ing cement grout into these after erecting. Fig. 1 shows a general arrangement of this type of beam as used for ordinary flooring, and it will be seen that a local application of a load on any one of the units is distributed to the adjoining ones by means of the system of the grooves locked into one another by the cement and sand grout. The distributing power is, of course, limited by the strength of the mortar between the adjoining units. The beam itself is reinforced to take whatever bending or shear is required by the loading conditions, and is generally made hollow to reduce the weight. It will, however, be noticed that full advantage cannot be taken of the monolithic nature of the material, inasmuch as it would be difficult to establish longitudinal continuity over the supports, and the transverse continuity is limited as just mentioned. This system of unit construction is generally limited to flat floor slabs.

If more elaborate designs are to be attempted on the system of ready-made unit work, smaller units are much more suitable, partly because they facilitate the handling, partly because the moulds become cheaper, and partly because it is possible to retain most of the monolithic character of the ideal reinforced concrete structure if the units are made properly interlocking. If the latter can be made to transmit just as much bending, compression, tension, and shear to the adjoining ones as they themselves can stand individually, then it does not matter how the spans are broken up by an odd number of units. A glance at Fig. 2 will show this, being a plan of a set of floor slab units resting on supports S, each unit being staggered with regard to the adjoining ones. It will be seen that if the block marked A is made capable of transmitting all the forces acting upon it to the adjoining blocks B, and these again to the blocks

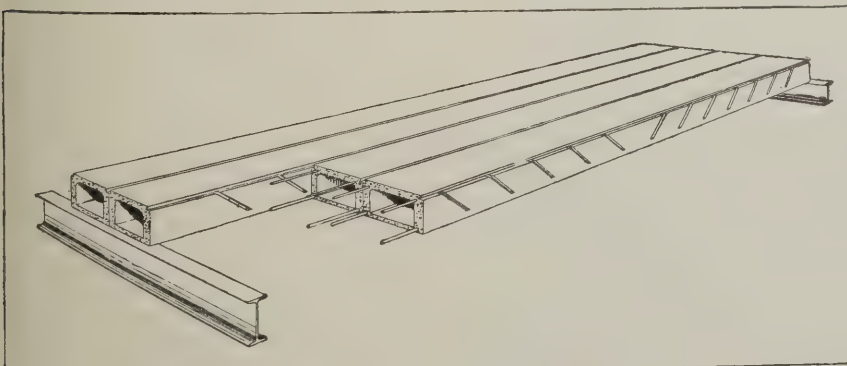


FIG. 1. WIDE-SPAN FLOORING UNITS.



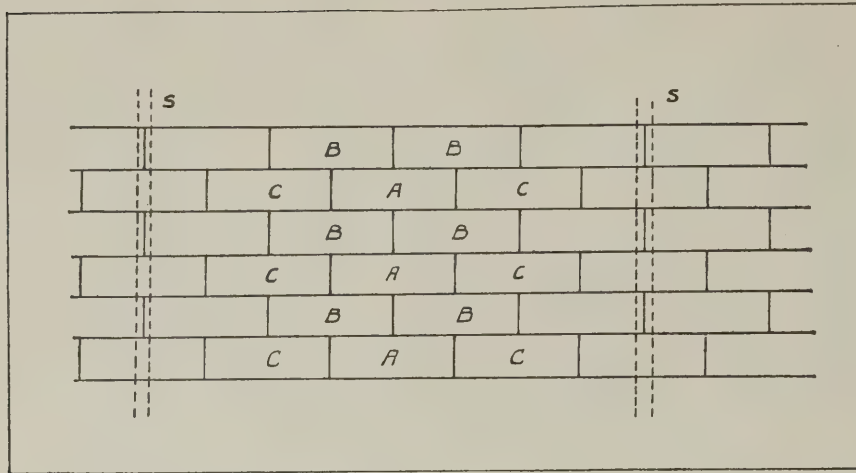


FIG. 2. PLAN OF FLOOR SLAB UNITS.

C, and so on, the same effect is obtained as in a monolithic floor where any local application of force is at once distributed over a large area.

It is clear that the transmission of forces from one unit to another is a very important factor, and that unless the transmitting power is equal to the individual resisting power, the aggregate of units is not monolithic. In this type of construction the units generally consist of blocks or slabs, the sides or ends of which are provided with a system of tongues and grooves so as to enable one slab to fit into the adjoining ones and thus prevent any movement up or down. A bending moment and a shear force can be transmitted from one slab to another simply by means of the above mentioned tongues and grooves, but if other forces, such as tension and compression, have to be transmitted, means must be provided for preventing the units from sliding longitudinally along the tongues and grooves, or in other words the units must be made to interlock against movements in either directions. There are several

ways of obtaining this interlocking, but if it is done by means of tongues and grooves it is necessary to satisfy oneself that the latter are capable of transmitting all the forces they are called upon to do.

The shape of the slabs or blocks may be straight or curved, to suit circumstances, and although unit work of this description cannot claim to solve all the problems of reinforced concrete construction, it has proved of great value in certain simple forms of construction such as flooring, roofing, walling, arches, tunnels, silos, bunkers, etc., by cutting down both the time of execution and the cost of the falsework. Figs. 3, 4, and 5 show examples of the application of unit blocks on work being carried out to the writer's design at the present time, and it will be observed that for erecting as soon as a sufficient number of blocks have been put up to form a complete line between supports no centering is required.

Fig. 3 is a 4,000 tons capacity coal bunker for the War Office, in which the panelling is carried out in unit blocks. Figs. 4 and 5 represent a tunnel subject to

very heavy loads, where the whole of the arching is also carried out on the block system.

Still another method of overcoming the difficulty of time and falsework, especially as applied to walls, may suitably be described under the same heading, although strictly speaking it does not come within the definition of reinforced concrete proper in the sense that the finished article is cast in moulds, whether in situ or otherwise. Fig. 6 shows a diagrammatic sketch of the wall in question, the core of which is built up of breeze concrete slabs set in cement with binding wires left in the joints. A mesh of reinforcing bars is fixed both sides by means of the binding wires, and the whole of the reinforcement is covered by a layer of strong cement and sand rendering. A constructional advantage of this method is the certainty of having the steel placed exactly where required and of having the strongest concrete material at the extreme fibres, so that both the steel and the cement and sand rendering are utilised to the best advantage. The building shown in Fig. 7 is an example of this construction, being a power station with adjoining battery room and pumping station for an ordnance depot. The whole of the walling is carried out by the above method, Fig. 8 showing one of the walls in various stages of construction.

## A METHOD OF PROPORTIONING MATERIALS FOR CONCRETE.

BY H. C. JOHNSON, M.C.I.

A comparison is here made of the usual 1:2:4 method of proportioning concrete with one in which, no matter what the aggregates may be, the quantity of cement in the finished material remains the same for any given volume. The percentage of dry cement, by volume, contained in the extremes of 1:2:4 concrete will vary the way from 18 per cent. to as high as 24 per cent. The proposed method ensures a constant percentage of cement in the neighbourhood of 20 to 21 per cent., and the specification based on the method would do at least two things: (a) Demand that exactly the same quantity of cement should enter a structure, whether it be built with gravel as the aggregate, or with broken stone as the aggregate. (Such would be the case when it is specified that 1:2 must be the proportions.) (b) Give the correct volume, and therefore the correct weight, of cement, that the volume of concrete in the structure will demand.

Another part of the method is that so large aggregates are given less sand than others, therefore the ratio of sand to large aggregate is not in the proportion of 2 to 1 but depends on the "workability" as measured in weight per cubic foot of the concrete. It demands that actual tests to determine the proportions shall be made of the materials which it is intended shall go into the job, and therefore prevents an excess of fine stuff being used, as would otherwise be the case.

The tests show that the weight per cubic foot is increased from 2 to 3 lb., while in one or two cases the addition in strength is as great as 500 lb. per square inch after twenty-eight days. In other cases there is an addition in strength even when 1 lb. cement is used.

### Details of Method and Tests.

It is well known that gravel and sand, or other concretes, when mixed 1:2:4

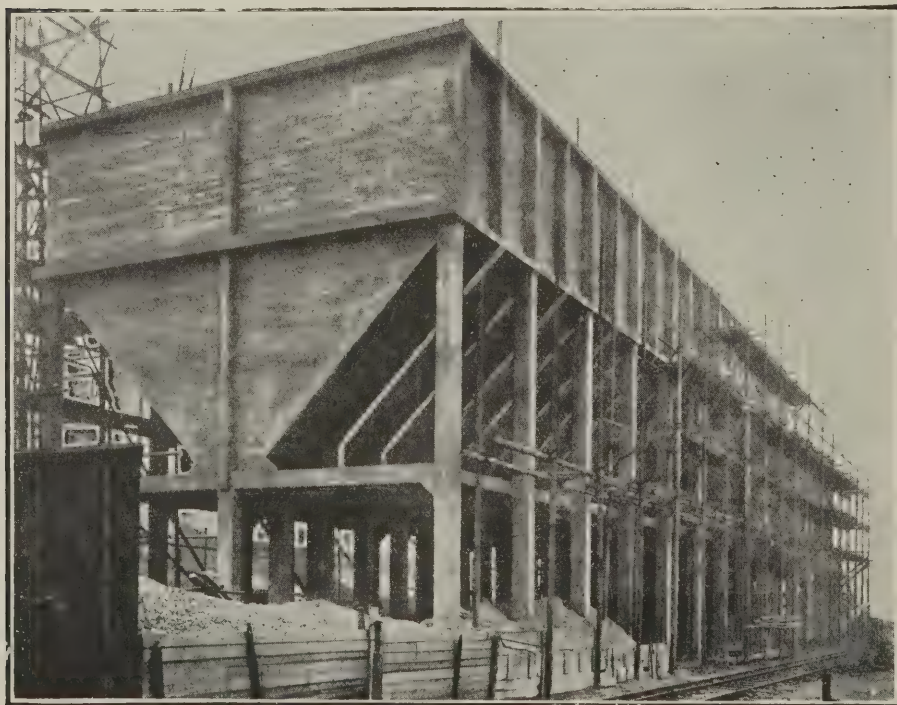


FIG. 3. A 4,000 TONS CAPACITY COAL BUNKER.

\*Extracted from a paper read at the Concrete Institute on April 26, 1917.



not as strong as hand-broken stone concretes, also that the larger the aggregate, other things being equal, the stronger the concrete.

A. 1:2:4 gravel concretes are, on the average, about 12 to 15 per cent. weaker than stone concretes. They contain also, on the average, 10 to 15 per cent. less cement.

B.  $\frac{3}{4}$ -in. aggregate concrete is stronger than  $\frac{1}{2}$ -in. aggregate concrete, while  $1\frac{1}{2}$ -in. aggregate concrete is stronger than either. The  $\frac{3}{4}$ -in. aggregate has 500 per cent. greater surface for its volume than the  $\frac{1}{2}$ -in. aggregate.

It was because of the above differences, A and B, that the writer was prompted to make the tests included in this paper. He had previously pointed out that by mixing concrete for two jobs of exactly the same size and volume, one, using gravel as aggregate, would call for 100 tons of cement, while the other, using broken stone as aggregate, would require 130 tons of cement. In spite of this there are a great many who believe that all 1:2:4 concretes contain the same amount of cement per

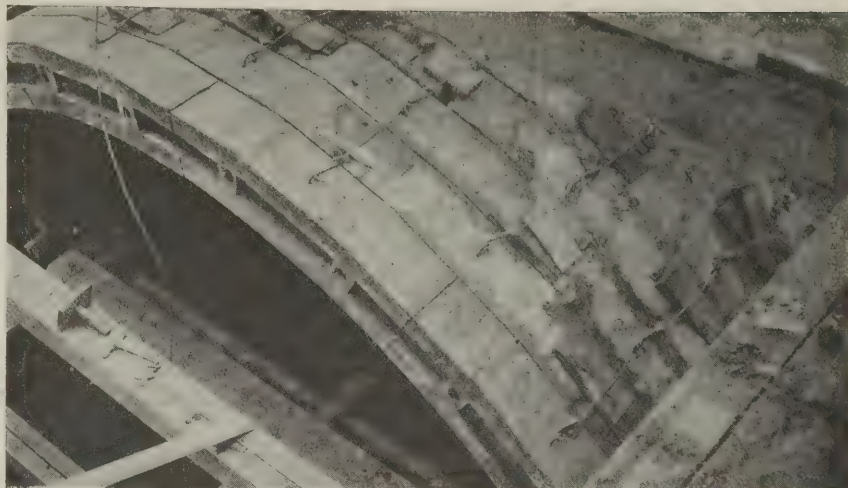


FIG. 4. TUNNEL ARCHING IN UNIT BLOCK CONSTRUCTION.



FIG. 5. TUNNEL IN UNIT BLOCK CONSTRUCTION.

unit volume, and therefore ought to be, in so far as cement content is concerned, of the same strength.

It has been stated that there is a difference of 100 tons and 130 tons between the cement in gravel and stone concretes. If that 24 per cent. can be saved by a contractor, it goes straight into his pocket, plus the saving in not having to handle that quantity; in other words, it is a clear profit, but a loss to the structure—a loss that seriously reduces its strength. This does not imply wickedness on the part of the contractor, but rather carelessness on the part of the architect or engineer.

The percentage of voids in gravel being smaller than in stone, less sand should be used:  $1\frac{1}{2}$  parts sand (on the average) to 3 parts gravel will produce a concrete worked as easily as, if not more easily than, 2 sand to 4 stone.

Gravels passed through and retained on screens as used for stone always have less voids; the popular idea is that they would be the same. It can be admitted that if stone could be "hand placed" into a receptacle, a very small percentage of voids would result. This indicates that stone concretes, unless they had considerable sand (2 to 4), would not be so reliable as gravel in the matter of density.

Gravel concretes mixed 1:2:4 are 3 lb. per cubic foot lighter than stone concretes. Proper proportioning will easily make up this 3 lb., in spite of the fact that the specific gravity of gravel is only 2.51, as against 2.70 for stone.

I have used the terms large aggregate and small aggregate on purpose to draw attention to the fact that sand is only finer gravel or granite or quartz, is an inert material just the same as the larger materials, and has to be "cemented" by the cement just as the larger particles. It is no use talking of mortar filling the voids or anything of that sort. Mortar is used by bricklayers and masons to bed two plane surfaces together; concretors use inert aggregate and cement with which to bind it together, but the outstanding fact is that the smaller the aggregate (all other things being equal) the weaker the concrete. The less fine aggregate (sand), providing a thoroughly workable concrete is produced, the better.

The author put forward the following: "Correct specification for concrete equal to average 1:2:4 concrete—i.e., containing 20 per cent. by loose volume of dry cement equal to 14 per cent. wetted":—

The concrete shall be composed of perfectly clean crushed stone or gravel passing

the  $\frac{1}{2}$ -in. sieve and retained on the  $\frac{3}{8}$ -in. sieve ( $\frac{1}{8}$ -in. suggested), the particles of gravel shall have a least dimension of not less than one-half the greatest dimension, the stone a least dimension not less than one-third the greatest dimension, and no flakes that can be levered with a knife from the surface of any of the particles. Specific gravity not less than 2.5.

The sand shall be thoroughly washed, and when dry shall pass the  $\frac{3}{8}$ -in. sieve and be retained on the 1-76-in. sieve, the particles shall be as nearly spherical as those of the gravel mentioned above. Specific gravity not less than 2.5.

The cement shall easily pass the minimum requirements of the British Standard Specifications of August, 1910, when not less than 22 per cent. of water is used for neat cement specimens and not less than  $8\frac{1}{2}$  per cent. for mortar specimens.

The proportions for mixing shall be determined on the principle that the minimum amount of sand consistent with easy working of the mass shall be introduced (not more than will give a ratio of 1 sand to 2 stone for stone concrete, or not more than will give a ratio of 1 sand to 2.4 for gravel concretes), and that the resultant thoroughly mixed concrete shall not contain less than 20 per cent. of cement by

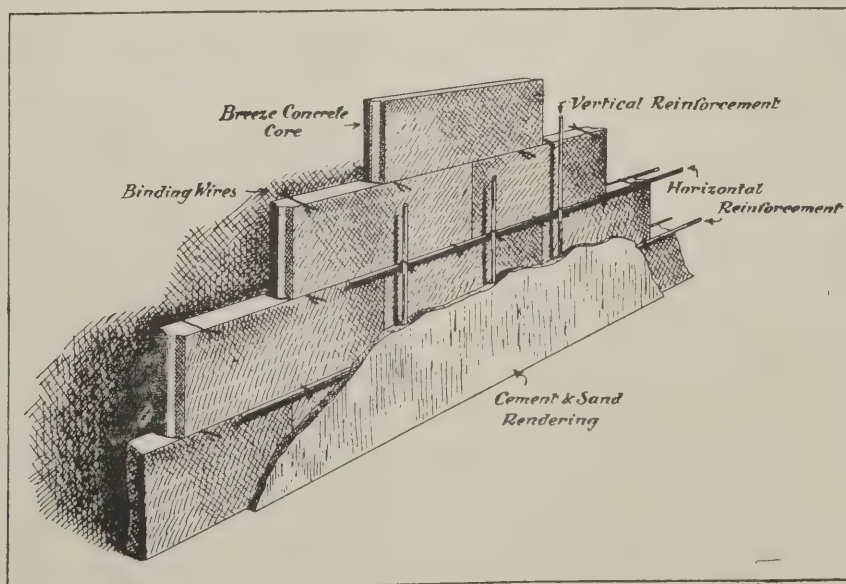


FIG. 6. CONCRETE SLAB WALL WITH REINFORCEMENT.



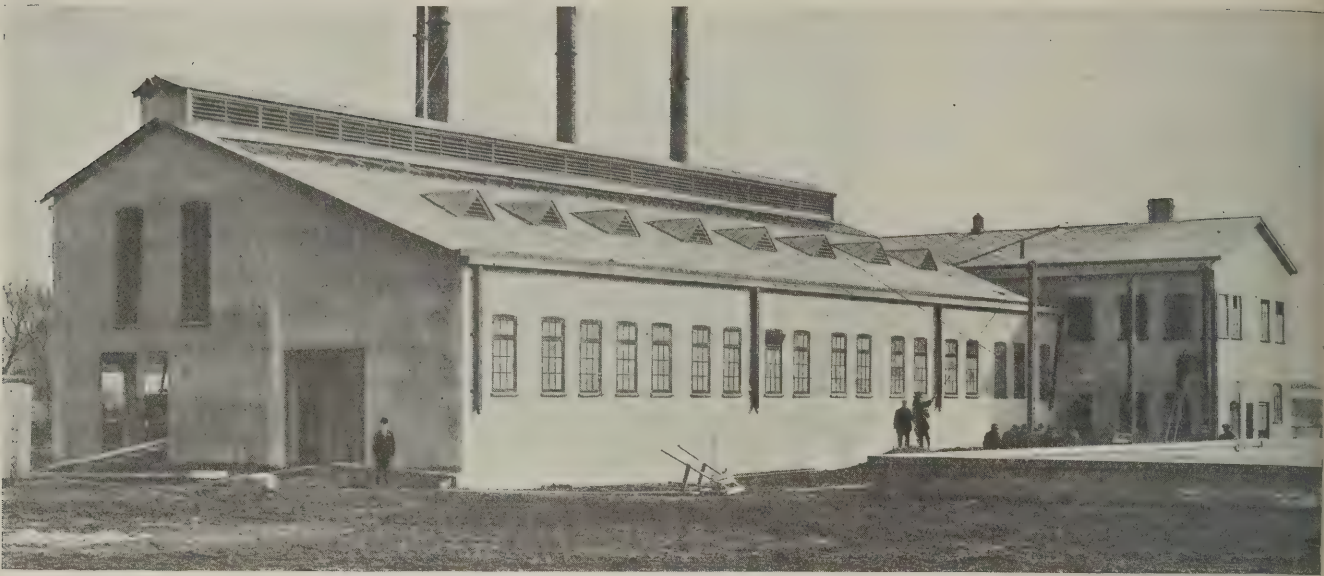


FIG. 7. POWER STATION FOR AN ORDNANCE DEPÔT.

loose volume or 14 per cent. by wetted (22 per cent. water) volume. The weight per cubic foot when wet shall not be less than 145 lb.

Samples of the materials proposed to be used shall be deposited with the undersigned (architect or engineer) before any concrete materials arrive on the job, and the proportions to be used shall be proved to be as called for, by a demonstration in the presence of the undersigned, who will then give written authority to use such proportions if found correct.

Such a method of proportioning is easy for the contractor, since he knows, as soon as he has his quantities out, exactly how much cement he requires. For instance, if a job called for 100 cubic yards of concrete he would require 20 cubic yards, equals 24 tons. His quantities of large and small aggregate will be easily obtained as soon as a test has been made. The architect or engineer will certainly know that his work contains a full and proper quantity of the only material which holds his building together.

#### Conclusions.

1. The 1:2:4 method of proportioning should be considered obsolete, since no two 1:2:4 concretes contain the same percentage of cement, neither does it allow the majority of materials to produce their best values.

2. An actual test of the materials it is proposed to use should be made, introducing the percentage of cement required for the particular purpose the concrete is for and finding the ratio of small to large aggregate accurately by this means.

3. Other things equal, the percentage of cement closely governs the strength.

Other things equal, the larger the aggregate the stronger the concrete.

4. Previous tests proved that washing the average aggregate carefully will allow 30 to 40 per cent. higher strength in a hand mix, but only about 15 to 25 per cent. in a machine mix. This is always excepting really dirty material.

5. Using a mixer and giving two to three minutes for mixing will give a concrete, other things equal, about 50 to 75 per cent. stronger.

6. For equal working consistency, and

equal cement gravel concrete is as strong as stone concrete.

7. Gravel passing same screens as stone always has less voids than the stone.

8. Fine sand concrete has smaller weight per cubic foot than coarse sand concrete.

9. Fine sand plus large aggregate (without cement) gives smaller volume than coarse. Fine sand plus large aggregate (with cement) gives larger volume than coarse.

10. Fine sand concrete is easier worked than coarse sand concrete for equal amounts of sand.

11. The finer the aggregate the more deleterious material and air it carries with it into the concrete.

12. The finer the sand the less should be used.

13. 30 to 40 per cent. higher strengths are obtained with 3.16-in. cubes than with 6-in. cubes.

14. Small cubes are more uncertain and inconsistent in the strength values than larger cubes.

15. In the future and in order that tests at various places shall be truly comparative, two things are required:

(a) The percentage of cement in the concrete.

(b) The strength of the cement in mortar tension or mortar compression.

#### MILITARY BRIDGES AND FIELD FORTIFICATIONS.

That America is entering the war with characteristic thoroughness and native ingenuity is evident from the account given in the "Engineering News-Record" of the work that is being done at a citizens' training camp in California. The author of the article is Mr. J. W. Swaren, whose observations should afford the means for an interesting comparison with British methods.

The citizens' training camp described was essentially an infantry camp, but a training in the fundamentals of military

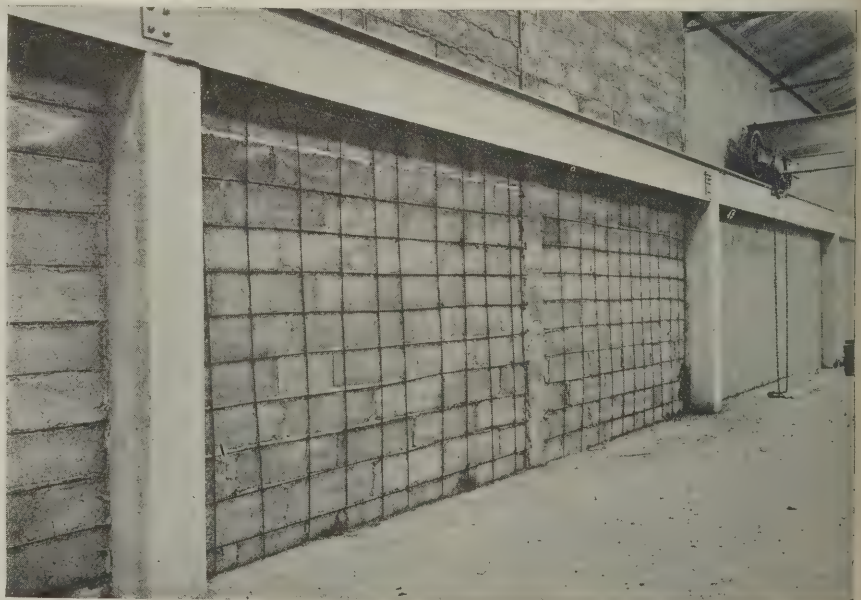


FIG. 8. CONCRETE SLAB WALLS IN COURSE OF CONSTRUCTION.



map-making, bridging, and field fortification was given. As only one engineer officer and a detachment of fourteen engineer troops were assigned to the camp, civilian engineers who cared for extra training in these branches were appointed as instructors. Preliminary instruction was given these men after the regular infantry work of the day was completed. Afterwards, selected men were excused from the greater portion of the strictly infantry work for five days. This arrangement permitted the execution of a greater variety of work and a more personal degree of instruction to the non-technical students than would have been attained otherwise. Since no military map of the manoeuvre area was available, a control map was the first work assigned to the engineer student corps. A section of the United States Geological Survey sheet was enlarged, and the military features added by service methods, the area being divided into suitable sectors and a party assigned to each. The entire area was mapped in a single day; during the night a draughtsman in the engineer detachment closed and traced the field maps, and issue of finished maps was made to all company officers the morning following. The men employed on this reconnaissance were afterwards utilised as instructors in the principles of road sketching. This work consisted of a lecture on the use of the service instruments, followed by a short road traverse.

Spar and pontoon bridging methods were shown. Two evening periods were spent in teaching the engineers the specified knots and lashings and bent framing. On the third day the entire training regiment was marched to a selected canyon in the Presidio grounds and undertook the building of a double-lock spar bridge. The engineer "rookies" were detailed to the clearing of the site, framing of bents and distance frame, and erection. The regiment, less the engineers, was assigned to the task of felling trees, trimming timbers, and transporting these to assigned yards. A standard 45-ft. double-lock span was erected, and then demolished by explosives.

#### *Field Fortification Works.*

Chief interest, however, centred on the works in field fortification. With the exception of the mine sap, these were laid out on the basis of complete shelter for one company reinforced by a machine-gun platoon. The site selected for this work was a long narrow clearing in the thicket that covered a large portion of the manoeuvre area. Though there were several cross-gullies, the maximum difference of elevation was not more than 6 ft.

#### *Trench Construction Problems.*

Special instruction covering location of trench trace, delaying works, and shelter was given to the engineer corps. Each engineer was assigned a definite task, and issued blueprints covering it. The actual work was done by details from the regiment, and was spread out over three days. As each detail worked but a short time on a task, moving on to the next, every man had an opportunity to study each provision of the entire works.

The soil was an old compacted beach sand, standing well for several days without shoring or revetment, but caving badly after considerable exposure. It was fortunate that not more than half a dozen cave-ins requiring even temporary support occurred, as available revetment material was scarce, the manzanita shrubs being entirely unsuited for making gabions. It is frequently said that one of the chief points of difference between civil and mili-

tary engineering is that cost in the latter is of little consideration. These conditions indicated pointedly that economy of material is a prime consideration in all military work. This becomes doubly true in a devastated theatre of operation. Also, it brought out that the military map should carefully show every timber structure, even the humble board fence having other uses than merely as a supply of fuel, while a flume might be a veritable gift of heaven if it paralleled a line of fire trenches.

A single line of fire trenches consisting of ten traversed squad trenches was located just below the skyline of a low knoll, the highest part of the area. Several trees that might serve as excellent aiming points were scattered over the area, and precautions to avoid these were taken. Machine-gun emplacements were located at each flank, with the embrasures permitting a grazing fire and covering the obstacles in front by cross-fire. Sandbag revetments were used, and a 5 ft. 6 in. trench, with bullet-proof parapet and parados, connected these emplacements with the nearest squad trench.

The squad trenches were all of the narrow type, developed under the stress of the accurate artillery fire experienced in the present European war. Communication was provided by a labyrinth immediately in the rear. All traverses between the fire and communicating trenches were sufficiently thick to resist field artillery fire, but the traverses between squad trenches were designed against rifle fire only. Each squad trench was designed to illustrate a different tactical principle.

Elbow rests were not provided in any instance, as it has been found that the men prefer to cut their own, and, while pressing close to the front wall, are better protected from shrapnel or high-angle fire.

#### *Building a Pontoon Bridge.*

Pontoon instruction was given with the light equipage with the Rees type of portal trestle. One evening was spent in teaching the mechanism of the trestle and pontoon assembly. This was followed by six drills, laying a six-pier (trestle, four pontoons, and one crib) bridge across a neighbouring lagoon. Next, there was an exhibition drill, thirty-six men participating, the entire bridge, 108 ft. long, being laid in 27 minutes. Then came the demolition by explosives of one bay. The bridge was afterwards dismantled, 7 minutes being consumed in removing all chess and balk, while in 13 minutes the pontoons and trestle were dismantled and stowed in proper order on shore. While far from a record, it is a good indication of the possibilities of engineer training. Previous to this experience most of the participants had been imbued with the idea that military engineering was essentially make-shift, accuracy being of little importance. It was found, however, that the trestle must be lined with great accuracy, and erected with a precision that seemed impossible of attainment with such apparently crude equipment, or the offshore terminal would not land where desired. However, after the maul and stake squad had laid and relaid the ramp mudsill a few times, the idea was caught, and the work proceeded without difficulties which were encountered in the early days of training.

#### *Revetments and Loopholes.*

Another series was intended to illustrate the use of revetments and loopholes. Its profile was 4 ft. wide at the top, excavated to elevation 3 ft. 6 in., where a firing step 1 ft. 6 in. wide was left on the front wall and the excavation continued to elevation 5. Brush and pole revetment sup-

ported the walls and floored the trench and firing-step treads. When the parapet had been raised 6 in., logs 8 in. in diameter were laid to form loopholes when covered by a roof of poles. The smaller diameter was laid inward, making the throat approximately 8 in. by 8 in.; the mouth was flared 18 in. wide, the increased diameter of the log bringing the height to approximately 10 in. Earth was piled on the roof until the parapet command was somewhat more than 2 ft. 6 in., the parados being brought to a similar height.

Another trench had exactly the same profile, but the loopholes were formed by open-ended plank boxes 8 in. by 8 in. at the throat, 3 ft. 6 in. long, and 12 in. by 12 in. at the mouth. Still another was designed to illustrate the use of gabions and fascines; but, as noted above, these could not be made, and sandbags were substituted. This trench was covered by wire netting carried on crossed stakes, designed for protection against hand grenades.

Each squad trench was connected to its neighbour on either side by an 18-in. communicating trench running around a traverse 3 ft. 9 in. thick and 4 ft. long. At each traverse a trench led back to a communication trench running the whole length of the position. These trenches were excavated to elevation 5 ft. 6 in., with 1-ft. parapets on each side. Being only 18 in. wide at the tread, good cover against rifle and shrapnel fire was provided. Drainage for the entire fire-trench system was provided by a sump and drain on the right flank. As ground water was not reached, this proved to be an unnecessary precaution, but served to draw attention to this feature of field fortification.

#### *Communication Ways.*

Two covered passageways, leading back to the cover trenches were excavated to elevation 6 ft. 6 in. and roofed with plank-ing carrying an earth cover 2 ft. deep. The one on the right flank was a single passageway 18 in. at the tread and was zig-zagged with increasing angle to the perpendicular as the fire trenches were approached, illustrating the proper method of defilading. The one on the left flank was a double way, 36 in. at the tread, and maintained the same angle of zigzag, illustrating how the tangents become more and more enfiladed as the fire trenches are approached.

An interesting feature of trench location was developed in the cover trenches. For most effective manning of the squad trenches, these should be not farther than 100 yd. in the rear; to minimise fire effect, not nearer than 25 yd. Placing the fire trenches under the skyline made it necessary either to expose the cover trenches to excessive fire or to place them at a distance so great that effective manning of the fire trenches was hampered. A compromise was effected by deflecting the line of cover trenches slightly and deepening the cover of the more exposed.

Six cover trenches, each 12 ft. by 12 ft. and excavated to elevation 7 ft. 6 in., were built. Plank roofs supported by old railway ties for stanchions carried the earth cover, which was 6 ft. minimum. All were connected by communication trenches, and each had a ventilating opening at the rear. One was arranged as a dressing station, three as quarters for men, one for kitchen, and one officers' quarters.

#### *Obstacles and Delaying Works.*

Obstacles and delaying works were constructed over a zone 25 ft. wide, 40 yd. in front of the fire trenches. These were divided into six sections, each illustrating a definite type. Heavy land mines, light



land mines, and fougasses were laid in front of the obstacles, and in the tactical manœuvre conducted to show the proper use of the works, a considerable diversion was caused by exploding these. But little instruction was given in mining and running saps, a single gallery being run about 25 ft. by the sheeting method; but, owing to lack of time, no attempt was made to build a grand gallery, drive listening galleries, or sink shafts.

All the work described was executed under the direction of the engineer officer attached to the camp, Captain Richard Park, Corps of Engineers, U.S.A.

## NATIONAL FUEL ECONOMY: A HINT TO ARCHITECTS.

(Contributed.)

The probability, which almost amounts to a certainty, that the aftermath of the war will lead to radical alterations in the methods of heating houses and of the kitchen arrangements for cooking food and heating water, has hardly begun to be realised by the community at large. Probably very few have even heard of the appointment of the Board of Fuel Research, or been sufficiently interested to read the brief announcements of it in the newspapers; and yet it is destined to effect drastic changes in almost every home and to exercise an important influence in the future on all domestic architecture.

The appointment of this new Board of Fuel Research, which not only possesses power to initiate industrial and laboratory research into the use of coal, but to carry its conclusions into effect, is long overdue, for economists and scientific men have realised for years that our present methods of using and wasting our national stock of fuel could not continue without leading to disaster; but it has needed the war to drive this conclusion into the minds of the powers that be. When our stock of coal, the amount of which is known with a fair approach to accuracy, even begins to approach exhaustion, our industrial prosperity will come to an end; and the new Board has been appointed with a view to postponing that disaster as long as possible. There is very little doubt that it will arrive at some of its most important decisions very quickly, for the two great sources of waste, namely, the burning of raw coal in domestic fires, not forgetting the kitchen range, and in steam-boiler furnaces, are well known. Nobody who is in touch with the subject has the least doubt that both these methods of wasting coal will be prohibited in the near future, the reason being that when coal is burnt in the raw state the whole of the valuable by-products which are obtained when coal is distilled in a gas works are lost; and not only are they lost but many of them simply escape up the chimney in the form of soot, sulphuric acid, and other compounds to befoul the atmosphere of our cities. These by-products include ammonia, sulphur, cyanides, and, last but not least, the coal-tar oils and similar substances, which are now of almost inestimable value for making dyes, drugs, and high explosives. Under modern conditions any country that allows these largely to go to waste is rushing to ruin.

The consequence of the appointment of the new Board will probably be that in a short time the blazing coal fires in our living-rooms, and the shovelling of coal into the kitchen range, will be things of the past, and builders will have to consider

how they propose to deal with the alterations that will be necessary in house construction. Professor H. E. Armstrong has suggested that in the future the gas companies should not carry the distillation process necessary for the production of coal gas and the recovery of the valuable by-products so far as they do now, thus producing a soft coke, somewhat similar to the "coalite" of which so much was heard a few years ago. This would certainly assist the householder to tide over the transition period, for this coke could be burnt with a limited amount of satisfaction in the ordinary open grate; it would only be of limited application, however, for, although such a fire might warm the room more or less sufficiently, the satisfaction derived from it in actual warmth or in appearance would be very much less than that derived from a modern gas fire. And it must not be forgotten that the production of gas will be greatly increased and cheapened, and gas will consequently offer great attractions. Its only competitor is likely to be electric current, but although this may come much more largely into use for power and lighting purposes, it does not seem probable that, at all events for some time to come, it will compete with gas heating.

As, therefore, it seems extremely probable that gas will be the principal domestic source of heat for many years to come, builders will act wisely, when planning all houses for erection after the war, in substituting gas heating and cooking appliances for the open coal fire and the kitchen range and for heating the bath water.

## OBITUARY.

*Second Lieutenant John Lucas Warry, A.R.I.B.A.*

Second Lieutenant John Lucas Warry, Sherwood Foresters, who died of wounds on April 27, aged thirty-two, was the younger son of the late W. G. King Warry, of Ilford. He was educated at Maidstone Grammar School, and subsequently chose architecture as his profession, becoming an Associate of the Royal Institute of British Architects. He joined the Artists' O.T.C. at Easter, 1915, and in July of the same year received his commission. He served with the Sherwood Foresters in Dublin during the rebellion, and went to the front with his regiment in February of this year. He was in command of his company during several heavy engagements, including the action in which he was mortally wounded, and on the day of his death was to have been recommended for promotion to the rank of captain. His colonel writes: "He was a brave man, if ever there was one, and led his company right on to the enemy's wire only twenty days ago, coming through unscathed. If you could have seen the anxious way in which the men crowded round his stretcher you would have realised how they loved him. . . . We all loved him." Mr. Warry married, in 1910, the only daughter of Mr. F. G. Andrew, of New Southgate.

The Mayor of Margate has erected, at his own cost, a handsome shrine to the memory of 173 Margate men who have been killed at the front.

A brass tablet is to be placed in St. Matthew's Church, Ealing Common, in memory of the Rev. H. C. Douglass, founder and first vicar of the church, who died suddenly at the altar while celebrating Holy Communion on August 13 last.

## LEGAL.

### Building Agreement :—Government Regulations.

#### *Innholders Co. v. Wainwright.*

May 5. King's Bench Division. Before Mr. Justice Ridley.

This was an action by the Innholders Co., of the City of London, against Mr. Fraser Wainwright, surveyor, to recover the sum of £550 under an agreement.

Mr. A. Neilson appeared for the plaintiffs, and Mr. W. Williams represented the defendant.

Mr. Neilson stated that in February, 1914, the defendant entered into an agreement to take land from the plaintiffs on a building lease. At that time buildings were on the site and were occupied by tenants, and the agreement was that as soon as the existing tenancies came to an end the defendant would take possession of the premises and would pull down the old buildings and erect new buildings. The existing tenancies ran out in June, 1916, and the defendant took possession of the site and began to pull down the old buildings; but before he could begin the rebuildings an Order was issued on July 14, 1916, by the Ministry of Munitions, prohibiting any building work without a licence. The defendant applied for a licence, but the Ministry refused it, the result being that, though he had pulled down the old rent-producing buildings, he could not make any profitable use of the site whatever. When the new buildings were roofed in and the carcass was finished to the satisfaction of the plaintiffs' surveyor the lessors were to grant to the defendant a lease of the new buildings for ninety-nine years from June 24, 1913, at a rent of £500 a year for the first three years and eventually at a rent of £2,400 a year.

Mr. Williams submitted that in the unforeseen circumstances which had arisen, the whole contract was suspended, and in support of this contention he cited the commercial decision in the case of "Tamplin v. Anglo-Mexican Petroleum Co." and the "Metropolitan Water Board v. Dick, Kerr, and Co." He did not suggest that the contract was destroyed altogether, but he did submit that it was suspended.

After hearing Mr. Neilson in reply,

His Lordship gave judgment for the defendant, with costs. In doing so his Lordship reviewed the circumstances of the case and noted that the claim was two quarters' rent. He agreed with the contention that the relationship of landlord and tenant had not arisen between the parties, the position appearing similar to that in the case of the "Metropolitan Water Board v. Dick, Kerr, and Co." The action of the Ministry of Munitions both there and in this case had been the cause of the difficulty, and on the authority of that case he thought that he would be justified in holding that the whole contract was at an end. But he thought it would be a more satisfactory decision if he applied the principles laid down by Lord Haldane in the "Tamplin" case and said that the contract was not destroyed, but was only suspended. He therefore held that for the period during which it was impossible to get the prohibition against building removed the contract was suspended. The question was one of law, and was a difficult one, but that seemed the fairest result. Judgment for defendant, with costs.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MAY 23, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1168.

PIECEWORK has been often suggested as a remedy for low output by workmen in the building trade, and the system is cogently advocated in the May number of the "Decorator." We are not quite sure, however, that the writer is not over-sanguine in his claims for the system—"that it will bring the employer and employed closer together in their mutual interest, and will, without doubt, eliminate to a very large extent waste of time and put the workman on his mettle to produce the best that is in him." Personal observation of piecework in various trades does not flatter these hopes. As to piecework putting a man "on his mettle to produce the best that is in him," our own experience is to exactly contrary effect. We have seen it produce (save only for quantity) the worst that is in him. Piecework seems to develop all the most malevolent elements of the worker's character. Quantity becomes his single aim, and he does not care how he achieves it—whether by scamping the work or by placing his fellow-workers at a disadvantage, or by wearing himself out with over-exertion. Quality he regards as negligible to the utmost limit that the employer will permit. If piecework were generally adopted it would mean good-bye to all pride in workmanship; and we should have thought that, of all trades, that of the decorator was the one in which this pride was indispensable. In putting forward economical theories, there is commonly a strong temptation to ignore the vital element of psychology, and we fear that the present proposal is a case in point.

Industrial organisation having got itself into a rather embarrassing tangle, any suggestion for improvement deserves very careful consideration, and it is in this sense that we venture to question the efficacy of the "piecework" solution of the problem. When we are told that "The difficulty of opposition by the unions on the plea of protecting the slower workmen can be overcome by paying the men in gangs of from six upwards, the total work done by such gang being allocated equally, or in any other way they may decide," we feel bound to observe that this plan has been tried and found wanting. It revives the old "gang" system, which gave rise to endless disputes, often culminating in bloodshed. Where the allotment of wages is left to the men, no man ever believes that he is getting his fair share, and every pay-day brings purgatory to all concerned. Then there is a suggestion that "before an estimate is drawn up it would be necessary for the master-painter to consult, say, two or three of the men appointed by their fellow-workmen for the purpose, and to agree on the price of labour for every unit in the bill of quantities." If, in the eagerness to get the job, the tender is too low, the employees will share in the loss—their labour will be inadequately paid. This would lead to perpetual wrangling and discontent, between employers and employees, as well as among the men themselves, whom, moreover, it would be difficult to induce to come into competition with other gangs belonging to the same union. They would most likely regard such competition as an abnegation of trade union principles, in which co-operation, not competition, is a fundamental conception. At the same time the system offers an approach to that co-operation

between employer and employee in which a certain school of economists foresee the ultimate solution of the industrial problem: their beatific vision involving, we understand, the inclusion of employers and employed in the same trade union! Thereafter immediately "the brotherhood of man, the federation of the world." There shall be no more wars, industrial or other.

But the immediate problem is, how to increase industrial efficiency all round, and, especially, how to get from the workman a willing yield of the most and best that is in him. All existing systems having signally failed to secure this object, it follows that they should be superseded by methods promising better success. That a fixed minimum wage (which is also automatically the fixed maximum wage) tends disastrously to restrict production is established beyond question. Beyond the desire to keep his job, a workman has no inducement to exert himself to the fullest extent of his power. Even if he is ambitious of promotion, he knows that knowledge, and quality of workmanship, will serve him better than speed. It is a saving grace of his fellow-workers that, while they would resent and thwart his speed, they will admire and respect his good craftsmanship. If, however, they thought that he was "doing too much," they would immediately persuade themselves that his quality suffered in consequence. Naturally enough, the quality often suffers from the quantity; which is one of the gravest dangers of piecework. Some system of grading the workers, in which superior speed or superior quality of workmanship should be more generally and more generously rewarded is desirable, but there are many obstacles to this course, most of them arising from petty jealousies among the men, and it seems hopeless to expect reform through any mere readjustment of details; any change, to be effectual, must be fundamental, and must include a more just conception of duty to the State than at present prevails among either employers or employed.

One means of "speeding-up" and of obtaining better as well as quicker production, with perhaps a keener and broader sense of citizenship, is in a fair way to materialise, if the Minister of Education gets the support he deserves. This support must come not only from the State, from municipalities, from doctrinaire educationists, but from employers and employed, from parents and guardians, and from the youths who are to be educated. A more sympathetic attitude towards education is the great desideratum. Its worth and its potentialities are insufficiently realised. Yet, as a thoughtful writer has said, "Industry and education have the same interest at stake. The employer complains of the average inefficiency of help and the weight of his taxes, but continues to employ the cheap, untaught, unripe labour which society affords him. Any survey of unemployment conditions brings a conviction that, in general, education has been inefficient and insufficient, as regards the body of humanity; that the sense of citizenship is inadequate; that the ignorance of ordinary health laws is one of the great zeroes of the system; and that the failure to provide



elementary technical fundamentals in a curriculum planned for workers is one of the greatest causes of misery and inequality." Money spent on right education has been truly described as "nothing less than an investment in human power." It is a necessary investment if this country is to hold its own among the nations. But money cannot do everything. In the most successful systems of technical education abroad, personal service has been an essential factor. Employers have given time and thought to it, and have enriched it not merely with their money, but with their personal experience; and they have been justified by results which, compared with those attained in our own country, seem almost incredible. This prolific personal sympathy must by all possible means be made to pervade the country before Mr. Fisher's schemes can have a fair chance of success.

\* \* \* \*

In an article on "The Cost of Building: How it has been Raised by War Conditions," in "Common Sense" for May 12, a master-builder attributes the enormous increase in the cost of the cheaper sorts of timber—which he estimates at 150 to 200 per cent.—chiefly to the lavish use of the material for temporary hutments and similar work during the first year of the war. He adds that for these purposes "concrete or bricks would have been better, and certainly more conducive to health and durability." He is no doubt correct in both assumptions. We were among the first to protest against the extravagant use of timber for Government buildings, and we have repeatedly shown that it was unnecessary. Concrete and bricks, being native materials, are no doubt plentiful enough, especially since their use for private work has been virtually prohibited; but, speedy erection being essential, we suggested that this object could be best attained by adopting some of the newer methods of construction. Why the Government departments concerned were so slow to adopt them is inexplicable upon any other supposition than that, at the outset, they were deaf to the advice of organised architects and builders.

\* \* \* \*

Professor Edward S. Prior has written to the Press in support of the Bishop of Truro's advice not to be in haste to put up war memorials. It is sound counsel with respect to what may be called general memorials, because, alas! these are necessarily incomplete until the war shall have ceased. In this respect, however, the advice is rather superfluous. With regard to individual memorials it is much less likely to be observed. Those who can afford to erect memorials to their heroic dead will almost invariably hasten to do so upon an overwhelming impulse. Professor Prior contends that "The nature of a memorial work renders all insincerity of merely commercial or professional design for it out of place. The artist craftsman is needed, who does his own work, is paid directly, and has the responsibility and honour of its art." But practically all the young men of ability in the crafts have been absorbed in the business of the war. It is common decency to await their return and not supersede them with the hack products of business designing. We do not quite like the tone of this protest. To assume that commercial or professional work is necessarily insincere is to beg a question which is eminently debatable and quite indeterminable.

\* \* \* \*

Equally disputable is the assertion of the superiority of the independent craftsman. In the first place, one never knows where to find him; and that, as a free lance, he produces better work than he would do if he worked for a firm is a gratuitous assumption. If he is a real artist, he does not sell himself hand and soul to

his employers, who relieve him of a good deal of "commercialism" with which he would be burdened detrimentally to his art if he had to forage for work and haggle about its price in the market. Dull mechanical "hack designs" there are, no doubt, in plenty, but they do not all pass through the hands of the dealer or the shopkeeper; some of them come straight from the hands of the craftsman, who is *ipso facto* a dealer. With Professor Prior's plea for the young men at the front we are heartily in sympathy; but they, we are sure, would be the last to wish that all such work should be suspended until they can come back to share in it. They know that such work is needed by the elderly or otherwise ineligible artists who must perforce remain at home; and they know also that to commission it immediately is a merciful relief to the sorely stricken hearts of the bereaved.

## CORRESPONDENCE.

*Dundee Housing and Town-planning Schemes.*  
To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIRS,—I am much obliged to Mr. James Thomson for his very detailed reply to my criticism of his plan. I am afraid, however, that I cannot see the error of my ways, and that no amount of argument will convince me that the standard for a workwoman should be lower than that for a workman. That the kitchen was a "kitchen scullery" made no difference to my criticism. Mr. Thomson goes on to remark that before I can criticise dwellings to be provided for human beings, I must know the "housing conditions to be abolished." I must disagree. The only requisite for criticism of the dwellings to be provided is some idea of the minimum requirements necessary to physical and moral well-being. What I am concerned about is not the diminishing of disabilities, but the abolishing of them.

The following are my conceptions of the minimum required: (1) Living-room not used as a bedroom or scullery. (2) A scullery provided with sink, wash boiler, running water, and drainage. (3) Bedrooms sufficient to accommodate the inmates without the mingling of sexes or persons over ten years of age. (4) W.c. not directly communicating with any room. (5) A bath provided with hot and cold water. There are, of course, other matters relating to light and ventilation on which Mr. Thomson and myself are no doubt in agreement, and which it is therefore not necessary to tabulate. It is not a question of the relative cost of the new and the old style of building; it is the relative cost to the life of the nation with which I am concerned.

I am interested in a large housing scheme in an industrial village, in which the existing cottages have e.c.'s and no baths, yet I considered it right that each of the new cottages to be built should have a w.c., not entered off a room used for the preparation of food, and also a bath, in the very cheapest types, in the scullery—not an ideal position, I admit, but not an unhealthy one.

Even in war time, it has been found possible in this part of the country to let at 5s. per week (ex rates) cottages with living-room; scullery with bath, copper, and sink; a larder; w.c. opened off a back porch, and two bedrooms over; and a larger cottage at 6s. per week (ex rates) with living-room, scullery, separate down-stairs bathroom, w.c., larder, and three bedrooms over. Both these types have coals under the main roof off the back porch.

My criticisms are meant in the friendliest spirit, and if Mr. Thomson is ever in this part of the country I shall be glad to reciprocate his invitation.

J. ALGERNON HALLAM.

32, Park Place, Cardiff.



## HERE AND THERE.

ARE we to have a Ministry of Health? It could find plenty of work to do. Two pretty big jobs lie ready to its hands. It could find out why schools are so many hotbeds of disease, and what is the matter with the houses that feed them. Schools, secondary as well as elementary, have very short intervals of immunity from epidemics—scarlatina, diphtheria, mumps, measles. Just now mumps and measles are having a rather long and heavily scoring innings. Parents blame the schools, and the school authorities blame the parents. Both parties are right, and both are wrong. Epidemics do not originate in schools; they are merely collected there, for impartial distribution among the pupils and the teachers.

If teachers are constantly ailing, and have no great "expectation of life," that is not because the schools are badly drained, or ineffectively warmed and ventilated, nor because the occupation of teaching is essentially an unhealthy one. It is because in every congregation of human beings there is always a percentage of sickly units, and therefore the school atmosphere is always more or less tainted. Then the question arises, Why are the children sickly? and it is not easy to answer. There is *damnosa hereditas* to reckon with, and it must remain outside the pale of discussion until some severely Draconian by-law of the Ministry of Health forbids the transmission of any tendency to disease.

No doubt all disease is preventable, if only we had the skill and the will and the wisdom to prevent it; but there's the rub. Skill we have in plenty, but the other qualities are sadly to seek. Capitalists have not the will to incur heavy expenses in making the conditions of labour entirely healthy, nor have they the wisdom to see that a higher standard of national health and efficiency implies a large measure of prosperity for the country, and increased wealth all round. Here and there an employer has a full realisation of these truths, but the necessity of competing on equal terms with those who have it not prevents—except in rare instances—the squaring of precept with practice. Workers have not the will to forsake evil habits, nor the wisdom to cultivate good living, even when they are provided with the means. This, however, is a matter upon which it is fatally easy to lay too much stress. "What is the use," ask the cynics, "of providing decent houses for people who will instantaneously turn them into pig-sties? Have we not seen the ventilator choked with foul rags, and the bath loaded with small coal?"

Such untoward incidents have happened, but they do not afford sufficient data for cynical generalisation, nor do they excuse abstention from a campaign of cleanliness and health. The cynical argument against decent housing is on a par with that against higher wages—"What is the use of giving these people more money? They will only have more to spend on beer." Most of them, I am very confident, will be only too glad to spend their "excess income" on the higher rent of a better house, or of better apartments. Many workers "pig together," as it is put with such fine fraternal feeling, because they prefer the greater spaciousness and the better building of the house large enough to accommodate two or three families to the pokiness and the shoddy details of the one-family cottage. This is especially the case with the City clerk. He almost invariably prefers to share with another family a fifty-pound house, say, rather than to be the sole tenant of a twenty-five-pound dwelling in

an inferior street, and with all its appointments, from doorstep to chimney-top, of a distinctly inferior grade. Hence, the growing popularity of suburban flats, and hence the wild outcry in Scotland against the proposal to substitute "self-contained" dwellings for tenement blocks.

Evidently, therefore, the housing expert should give due weight to the arguments from psychology. A family man would much prefer a self-contained house if the rooms in it were not so miserably small, and if its every feature were not cursed with the stamp of poverty and inferiority. The very door-knob is of inferior grade. Now, unquestionably it is more healthy, both physically and morally, for families to live in separate houses, but the foregoing reasons why many of them refuse to do it cannot be safely ignored when the housing question is under consideration.

For the very large class who prefer to share a large house in a "respectable" street rather than to fill a small house in a mean street provision is being made by house-owners, forty to sixty-pound houses being converted wholesale into self-contained flats. It is a regrettable movement, perhaps, but it must be taken into account. Nor must it be contemptuously dismissed as an evidence of snobbery. A self-respecting clerk does not avoid mean streets because he is proud, but because he would rather not run the risk of having for his next-door neighbour a drunken navvy, for example, with dirty and uncouth children. That is where some of the psychology comes in. People cannot be classed and housed in strict accordance with their earnings. The navvy may be wealthier than the clerk. But the more closely one looks into it the more complicated is the housing problem seen to be. If the Government can be induced to make a substantial grant, some of it should take into consideration the needs of the clerk class—the prevailing element in commercial as distinguished from industrial cities.

They are not richer than the artisan class, but they have a higher standard of living, which ought to be encouraged rather than penalised. It is, as a rule, not they who supply the elementary schools with the inevitable contingent of sickly and verminous children; and one of the first duties of a Ministry of Health should be to protect them from infection. This would involve not only rigorous insistence on the building of wholesome houses, but also an obligation on the inmates to keep them wholesome. It would also involve clear recognition that cheap and nasty houses are strong in their reflex action on the inmates, and vice versa, in a vicious circle. In this matter, as in others, we should be the better for a little benevolent despotism. It is surely necessary to get the whip-hand of degeneration, demoralisation, and disease. There is no doubt about it that, as Mr. Hayes Fisher has said: "However they might constitute a Ministry of Health, whether they were trying to deal with the question of infant mortality, to decrease the death-rate, or to diminish disease in any form, at the bottom of all these questions was the question of housing. It was far and away the most important national question of the time." And yet there are those who deprecate national expenditure upon it! They are not likely to prevent it; and the worst that is to be feared from them is that they may succeed in cutting it down to the meanest minimum, so that the country will be crowded with those "rotten little cottages" which are the scorn of the architect and the despair of the sociologist.

DIODENES.

## THE PLATES.

*Hutcheson's School for Girls, Glasgow.*

THE new school for girls which has been erected in Glasgow for Hutcheson's Educational Trust provides accommodation for 800. The main entrance leads directly into the central hall, which is 2,698 sq. ft. in area. The headmaster's room and library are situated on the left, and the lady superintendent's room and school library on the right of the entrance. There are two entrances for pupils at either side in direct communication with the staircases and cloakrooms, as well as two exits in the playground. On the ground floor there are also seven junior classrooms and a teachers' room. On the first floor are two junior and seven senior classrooms, two music rooms and a teachers' room at the end of each building. On the top floor are six senior classrooms, three science rooms, and three art-rooms. The junior and senior classrooms accommodate forty-five and thirty pupils respectively. The domestic economy block is situated at the south-west corner of the site. On the ground floor are laundry and cookery rooms, and a large dining-room for the use of the pupils, with kitchen and storage accommodation adjoining. Upstairs there is the gymnasium, with dressing-rooms, also two rooms furnished as a parlour and bedroom, to be used in the teaching of domestic work. The heating is by low-pressure hot water on the drop system. The entire building is lighted by electricity. The ventilation is on the Glover-Lyon system. The architects are Messrs. J. Thomson and R. D. Sandilands, of Glasgow. The contractors for the whole building, exclusive of heating, ventilation, and lighting, were Messrs. P. and W. Anderson, Douglas Street Glasgow.

*The East Front of the Louvre.*

The construction of the eastern façade to the quadrangle of the Louvre was undertaken by Louis XIV. in 1664. Schemes were prepared by Leveau and Bernini, but both were abandoned. Perrault's scheme, which had been rejected before the arrival of Bernini, was again presented in 1667 and accepted. His famous colonnade, shown on one of the supplementary plates in this issue, was completed in 1674.

*Staircase, No. 9, Clifford Street, London, W.*

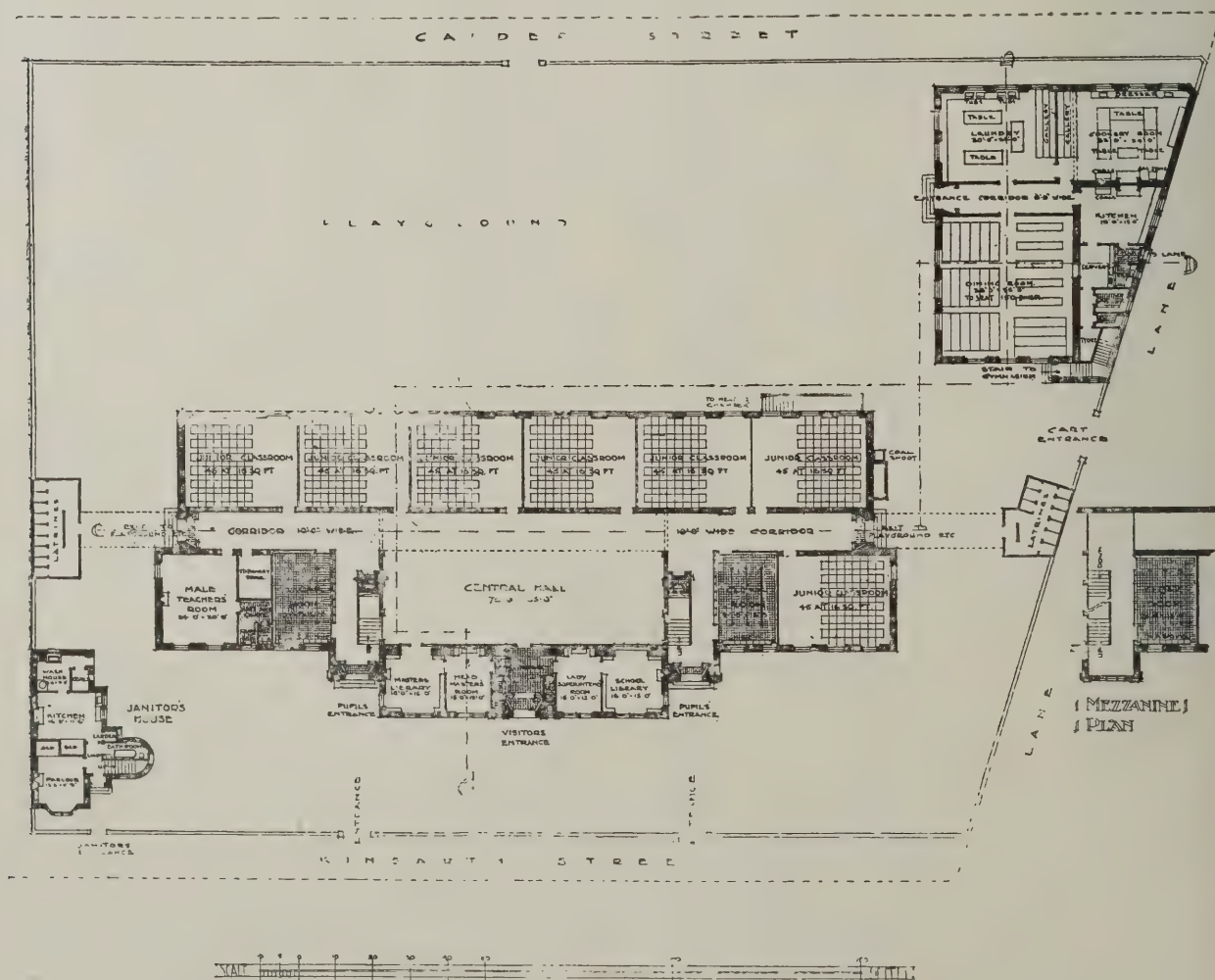
This very fine staircase belongs, approximately, to the middle years of the eighteenth century. It is of the symmetrical type, rising in a short flight between two Ionic columns, turning by a few steps to right and left to small landings, then returning on both sides, and finishing with the soffits of the two flights against the entablature of the ceiling beneath. The design may be attributed to Isaac Ware.

*The Bank of England, Bristol.*

This building was designed by C. R. Cockerell in 1844. In general character it is similar to the other branch offices which he erected about the same time in Liverpool, Manchester, and Plymouth. Our reproduction is made from a drawing by Mr. Gordon Hemm, of Liverpool University School of Architecture.

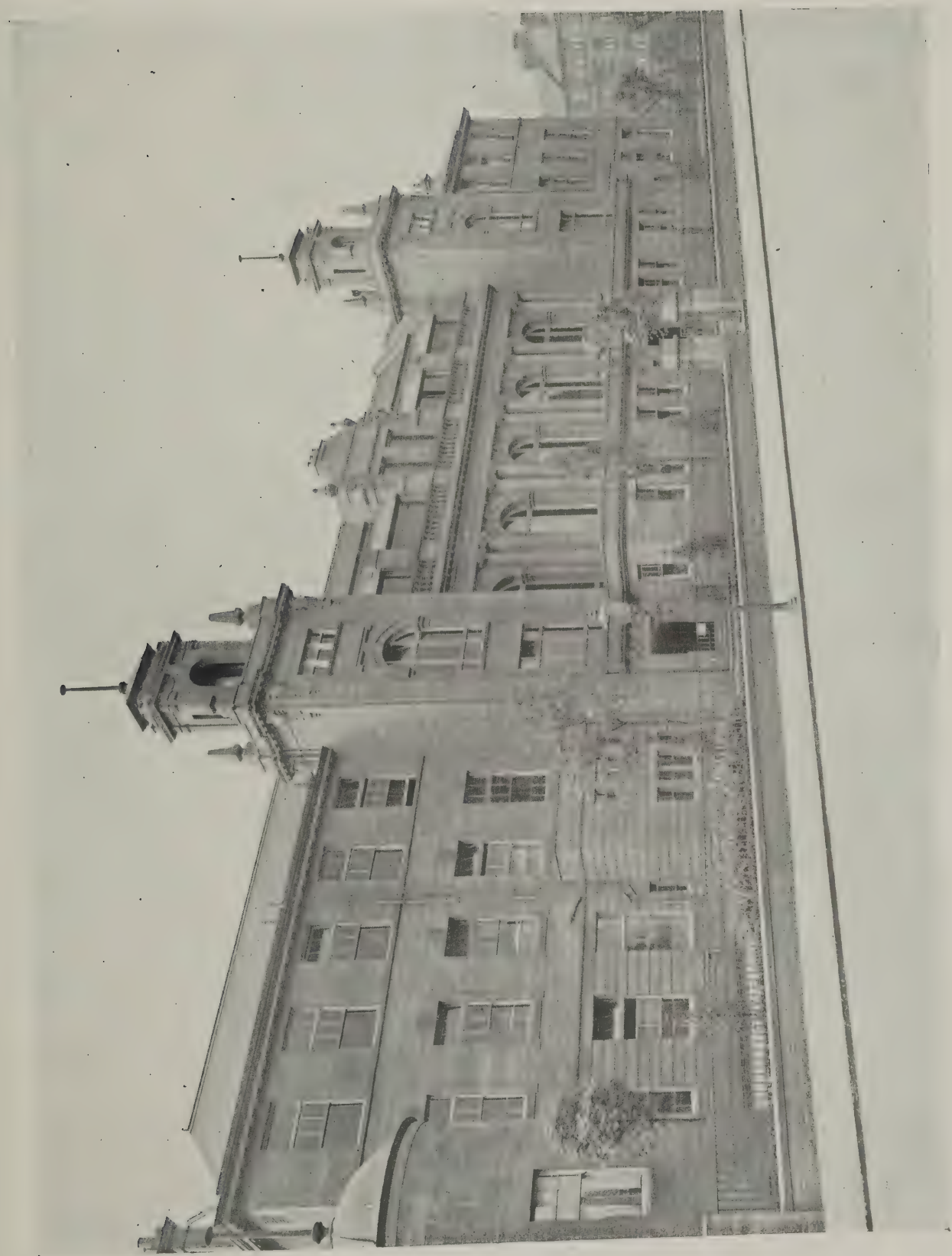
*Isolation Hospital, West Bromwich.*

This building, shown by the double-page supplement in this issue, has been recently completed from the designs of Mr. Gerald McMichael, A.R.I.B.A., of Birmingham. It is carried out in 9-in. bricks and roofed with Bangor slates. The total cost was £1,645.



HUTCHESON'S SCHOOL FOR GIRLS, GLASGOW: MEZZANINE PLAN.



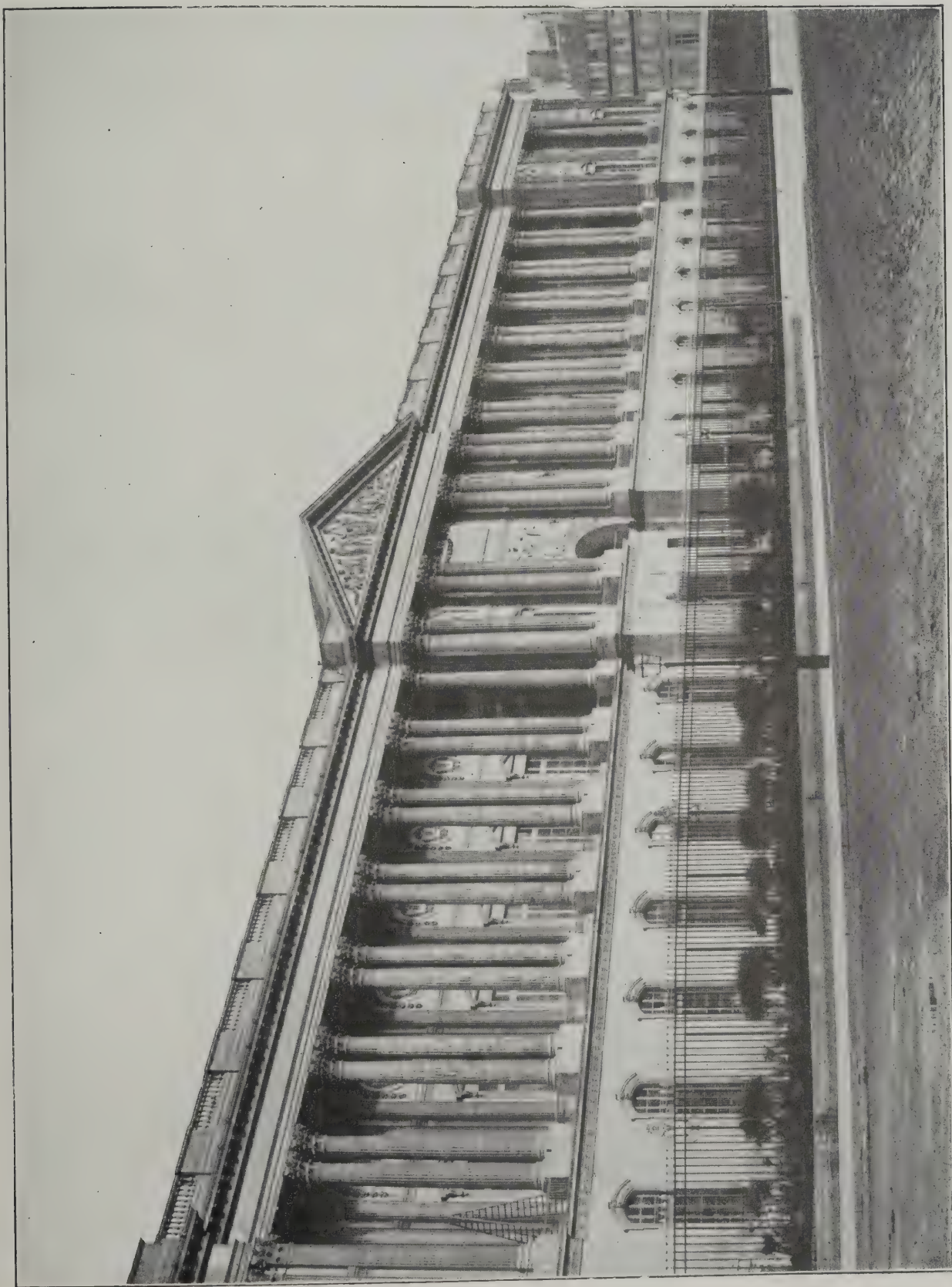


CURRENT ARCHITECTURE (SERIES IV.). XXI.—NEW SCHOOL FOR GIRLS, KINGARTH STREET, GLASGOW.

THOMSON AND SANILANTS, FF.R.I.B.A., ARCHITECTS.

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MONUMENTAL ARCHITECTURE (SERIES II.). XIV.—THE EAST FRONT OF THE LOUVRE, PARIS.  
PERRAULT, ARCHITECT.

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DETAILS OF CRAFTSMANSHIP (SERIES II.). XXVIII.—STAIRCASE, No. 9, CLIFFORD STREET, LONDON, W.

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THE FRONT FACADE

BANK OF ENGLAND BRISTOL

STUDENTS' DRAWINGS (SERIES II.). XLVII.—THE BANK OF ENGLAND, BRISTOL.

BY GORDON HEMM.

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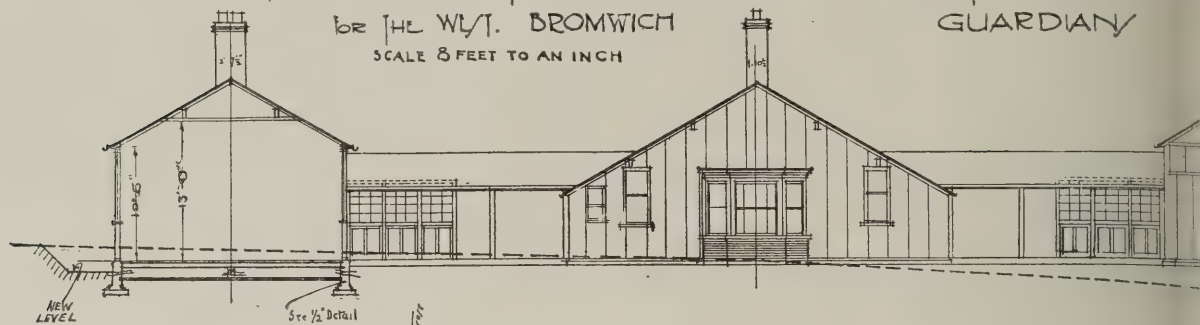


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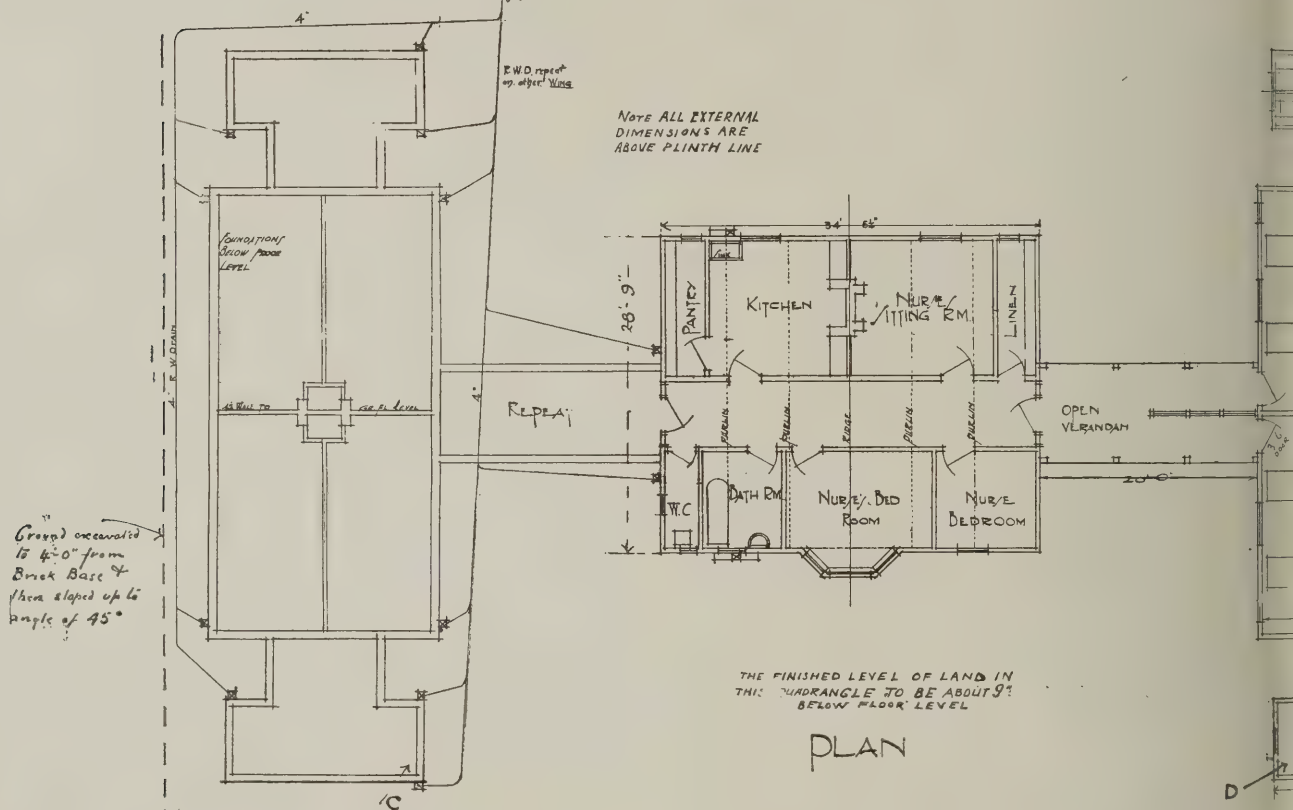
# PROPOSED HOSPITAL :: LINDON STREET :: WEST BROMWICH

for THE WY. BROMWICH  
SCALE 8 FEET TO AN INCH

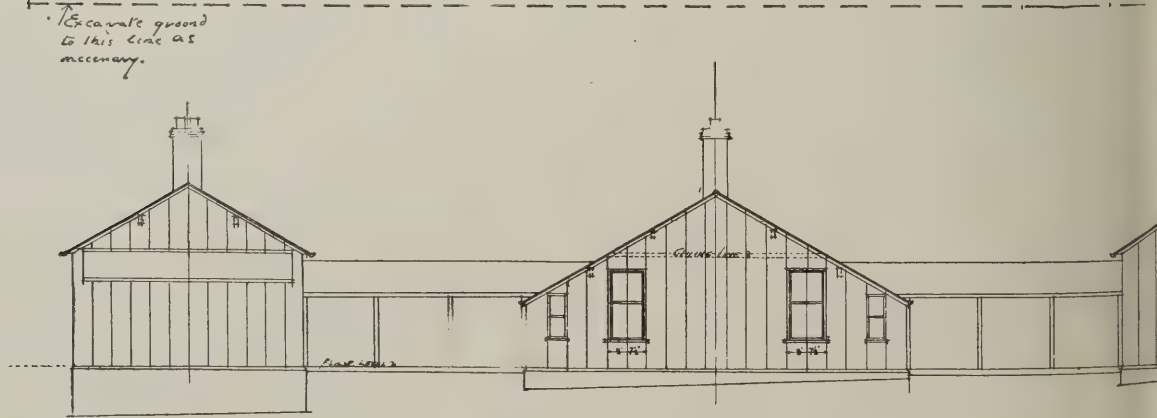
GUARDIAN



WEST ELEVATION



PLAN



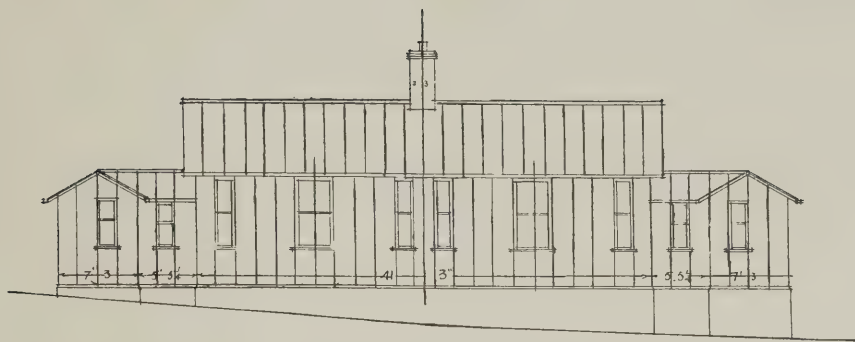
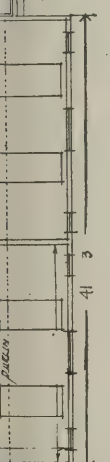
EAST ELEVATION



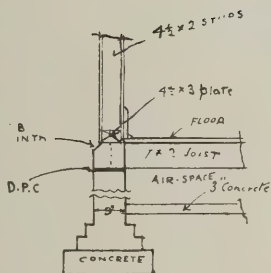
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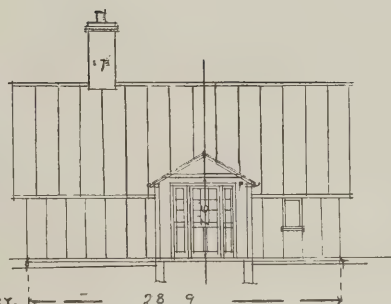
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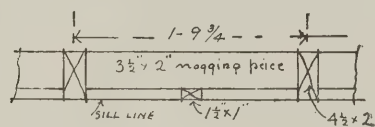
NORTH ELEVATION



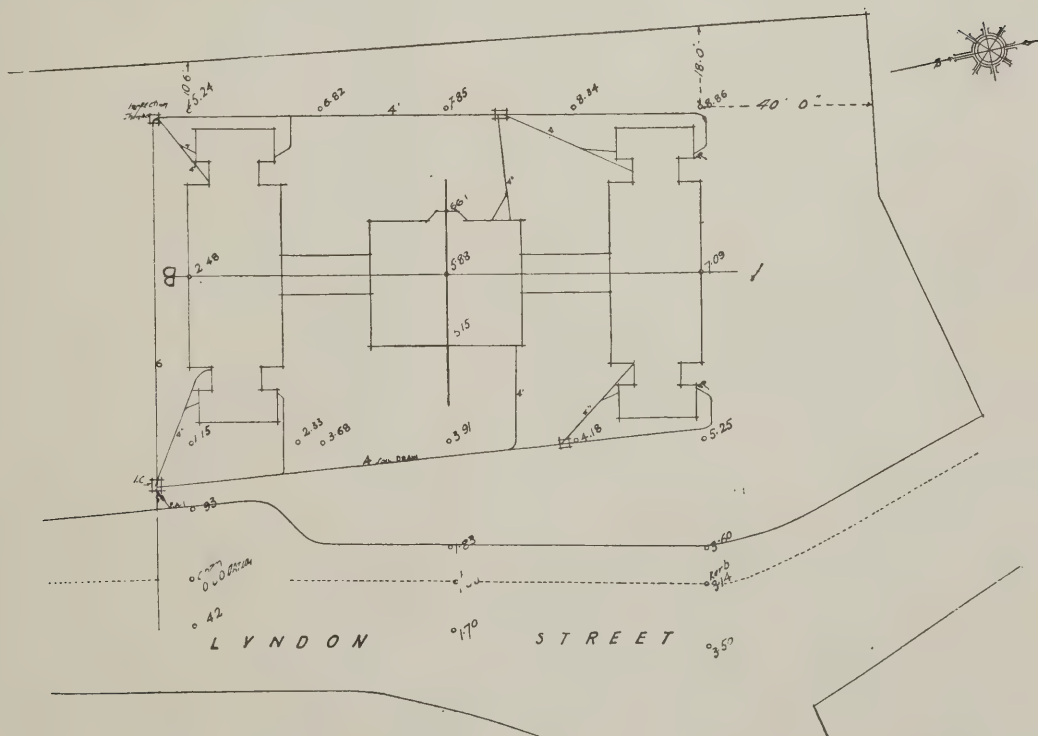
1/2" SCALE DETAIL THRO  
BASE OF WALLS  
INCLUDE FOR DEPTH AS NECESSARY.



SECTION  
THRO VERANDAH



PLAN OF EXTERNAL  
STUDDING WHERE  
PLASTERED INSIDE  
SCALE 1 1/2" TO A FOOT



BLOCK PLAN  
SCALE 20 FT. TO AN INCH

GERALD. MC MICHAEL. ARCHT.  
ARCHTCT. 105 COLMORE ROW  
BIRMINGHAM. 314

ISOLATION HOSPITAL, WEST BROMWICH.

B.A., ARCHITECT.

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## NATIONAL HOUSING POLICY.

LORD RHONDDA, President, of the Local Government Board, received on May 11 a deputation from the National Housing and Town-planning Council in support of the housing programme that has been formulated as the result of a series of representative conferences in various parts of the country. The President of the Local Government Board was accompanied by the Right Hon. R. Munro, K.C., M.P. (Secretary of State for Scotland), the Right Hon. W. Hayes Fisher, M.P. (Parliamentary Secretary to the Local Government Board), Sir Horace Monro, K.C.B. (Secretary to the Local Government Board), Mr. J. A. E. Dickinson, I.S.O., (Housing and Town-planning Comptroller, Local Government Board), Mr. Vaughan Nash, C.B. (Secretary, Reconstruction Committee), Mr. J. Walker Smith (Scottish Local Government Board), and Mr. F. L. Turner, C.B. (Private Secretary to the President of the Local Government Board). The deputation included, with many others, Councillor Harold Shawcross, J.P. (Rochdale), chairman; Professor Patrick Abercrombie; Professor S. D. Adshead; Mr. J. W. Cockrill, A.R.I.B.A., M.Inst.C.E.; Councillor W. E. Davis (President, Quantity Surveyors' Association); Mr. Howarth (North-Western Federation of Building Trades Employers); Mr. H. V. Lanchester, F.R.I.B.A.; Mr. E. C. P. Monson, F.R.I.B.A., F.S.I. (Vice-President, Society of Architects); Mr. C. T. Ruthen (Society of Architects; treasurer, Welsh Housing and Development Association); and Councillor S. Smethurst, J.P. (Past-President, National Federation of Building Trades Employers).

In introducing the deputation, Councillor Harold Shawcross said they were there to present resolutions passed at a series of conferences of local authorities held within the past six months. They desired the Local Government Board to make at once definite inquiries to find out what number of houses were likely to be built at the close of the war, and also to require local authorities to have everything ready for building when the war was over.

Mr. Henry R. Aldridge (Secretary) asked for urgency in regard to four points as to which it was possible that action might be taken without legislation. If decisions could be arrived at within a month on these points, an enormous amount of energy amongst local authorities would be set free in the preliminary work of preparing housing schemes. Without defining the amounts of housing loans and grants-in-aid, local authorities should be told that as and when the end of the war comes, if, in the meantime, they would get their schemes ready, financial aid would be afforded to them. In the intervening months before the close of the war the time might, and should, be profitably used in getting housing schemes ready to be placed in operation directly the war closed. Inquiries should be made to ascertain where housing action after the war would be needed. They also asked the Government to set at work the best brains of the country among architects and surveyors on the problems of designing cottages and the directions in which economies might be most advantageously effected. They asked that £150,000 should be set aside for this purpose. This proposal was on two grounds—first of all, economy, and, second, the need for improvement in the standards of working-class housing. Though this proposal would cost £150,000 in plans, it might save a great deal more than half a million in actual cost of building, because they were urging that, as a basis of these plans, standardised component parts might be employed. These standardised component parts should be determined, and then used in great bulk.

Lord Rhondda remarked that he was very glad to

have this opportunity of getting direct information from a number of men of practical experience, who had devoted a large amount of their time to the study of a very complicated and difficult question. He entirely shared the view of his immediate predecessor, Mr. Long, that housing was the most important question his Department had to deal with. It was the question that came first and foremost and unless they settled the question of the proper provision of houses in the country for the people, the consideration of other questions was useless.

Replying to questions asked by Lord Rhondda, who specially desired information as to the suggested sum of £20,000,000 which should be set aside, Mr. Shawcross said they did not now wish to define the amount, but would rather go on the number of houses required to make up the housing shortage. He estimated that to supply the deficiency in housing accommodation and to allow for clearing away slums it would be necessary to build 160,000 houses annually for the next ten years. If the cost of these were taken at an average of £250 each, there would be required to be spent some £40,000,000 a year for the next ten years.

Lord Rhondda observed that it was a very novel proposal that the State should allow £150,000 for designs.

Sir Horace Monro doubted whether it really was necessary to spend £150,000 on designs.

Professor Adshead said he had been intimately connected with this question of cottage building for some time. The architects, though not in agreement with every detail laid down, were all agreed on the desirability of regarding this proposal from a national standpoint, and doing the thing in a big way, which should create a real, live public interest. The points raised by Sir Horace were very real. He had observed that many designs had already been produced, and had asked what reason there was to suppose that they should get on any further with additional designs. His reply would be that in the first place the various designs produced by the Board of Agriculture, the Local Government Board, and others, while very valuable, had been either not sufficiently local or, in a sense, too one-sided—that was, too utilitarian, perhaps, in one part, and too artistic in another.

The Right Hon. R. Munro, K.C., M.P. (Secretary for Scotland), shared Sir Horace Monro's doubt as regarded the reception which the "design" proposal might receive at the hands of the Treasury. One hundred and fifty thousand pounds was an exceedingly large sum for any such purpose.

The Right Hon. W. Hayes Fisher hoped that Lord Rhondda would be able to secure from the Government a promise that substantial financial assistance would be forthcoming. It might be done in more than one way. It might be done partly in the form of a free grant towards the cost of these houses and partly in the form of a cheap rate of money. The local authority would be the principal agency through which they would build. They would probably use the public authorities, and also the local public utility societies, but he hoped they were not going to shut out private enterprise. He believed large landowners and large business men would be inclined to borrow money at a cheap rate to build houses, even though the State should say, "We want to have some control." At all events, do not shut it out. They wanted to consider all agencies.

Lord Rhondda said the discussion had been most useful and most informing. They had put forward a number of propositions to which they did not, of course, expect him to give a definite answer on behalf of the Government. He had no authority to do so.

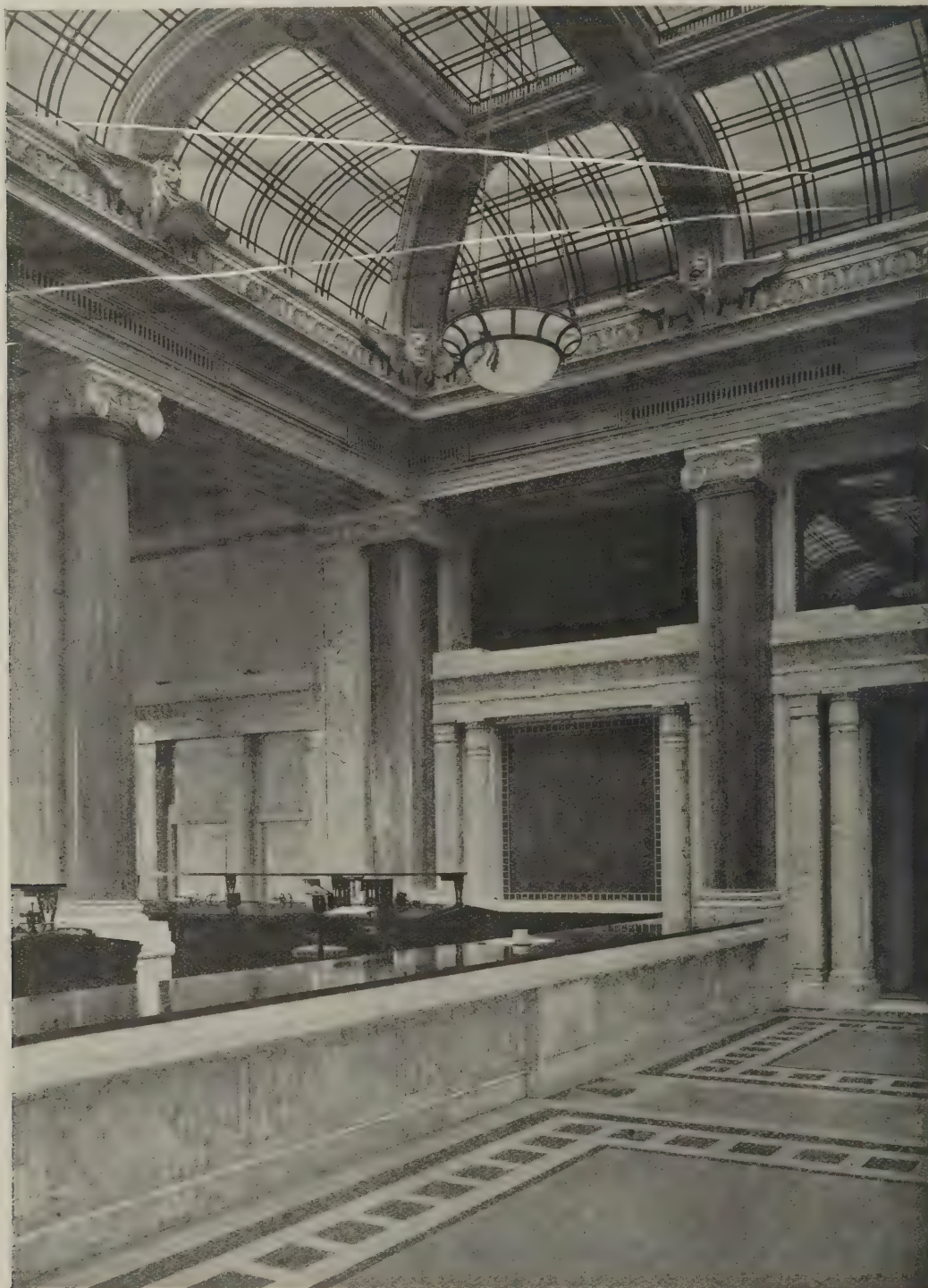


But he hoped he had satisfied them that in his Department they had got a very sympathetic Department. He fully realised that this question was the most important and urgent with which he had to deal, and they might rely upon it that the suggestions and proposals put forward would receive his very careful consideration. He could not now pledge himself to any of these proposals, but he would give them this general assurance, that he was sympathetic towards them. He hoped very shortly to put his plans before the Government, and then he would be in a better position, the next time they came, to give a more definite reply to the proposals.

[This report is condensed from the "Municipal Journal" of May 11.]

## THE "ARCHITECTURAL REVIEW."

THE principal feature of the May number of the "Architectural Review," just published, is a magnificent series of illustrations of the new Cunard Building, Liverpool, recently completed from the designs of Messrs. Willink and Thicknesse F.F.R.I.B.A. (Messrs. Mewès and Davis acting in an advisory capacity). The view reproduced below is generally typical of the fine character of the building. To the same issue Mr. Arthur Stratton contributes most interesting article on "Covent Garden Market and the Theatre," which will delight topographers and the general reader as well as the architect.



*Photo: Bedford Lemere.*

THE CUNARD BUILDING, LIVERPOOL: DETAIL OF PUBLIC SPACE IN GENERAL OFFICE.

WILLINK AND THICKNESSE, F.F.R.I.B.A., ARCHITECTS.

(From the May "Architectural Review.")





## WAR BUILDINGS SECTION

### WAR-TIME CONDITIONS AND PROSPECTS IN AMERICA.

IT is interesting to note the war-time attitude and opinions of American architects and builders. Our contemporary "The American Architect" claims that the accusation frequently made during the past two years, by cynics both at home and abroad, viz., that as a nation (i.e., American) patriotism was directly commensurate with the profits—that their attitude toward every world-question was determined by the possibilities for making money which it presented—has been effectively answered since the severing of diplomatic relations with Germany in the early part of February. Producers of copper are now supplying the Government's war needs at something like one-half the market price. Producers and manufacturers of steel are doing likewise. The free use of the largest plants suitable for the manufacture of war supplies and munitions has been offered to the Government. The leaders in every industry, trade, and profession have offered the facilities at their disposal for the use of the Government without thought of remuneration. More patriotic action than this—and, after all, actions speak louder than words—can scarcely be imagined.

That the entry of the United States into the world-war will produce a tremendous effect on the business of the country everyone concedes. Just what form it will take is not so apparent. It seems safe to assume, however, that the first effect will be to promote a tendency toward thrift in all classes. The savings banks should prosper and high-grade investments become popular. Funds for real estate improvements of sound character should be plentiful for at least a year, since the war expenditures for that period can scarcely equal the war profits of the past two years. Under such conditions building should be active and upon a large scale. There is but one adverse factor—the generally prevailing impression that building costs are excessive. That impres-

sion undoubtedly grows out of comparison of present costs with those of the lean period before the European war and ignores entirely the shrinkage in the purchasing power of money that has taken place since 1914. But regardless of ability to show a client that a dollar will only buy three-fourths as much of any commodity as it would three years ago, and that the cost of building is in practically the same ratio to former costs, he will continue to hesitate unless he can be convinced that no reason exists for expecting materially lower prices within a reasonable time. So the relevancy of an inquiry into the probable future of material and labour costs is apparent. The first important factor, quite obviously, is labour. Wages have increased in every industry, and it is certain that they cannot be reduced without an economic upheaval of extraordinary proportions. The tendency toward a shorter working day is generally approved, and everyone now realises that it carries with it a higher labour cost. Transportation costs, potentially at least, have increased along with advances to labour. An advance in freights to meet higher labour costs is inevitable. An acute shortage of labour now exists in the United States, and no relief is in sight. It is inconceivable that Europe will permit any considerable emigration after the war, as every able-bodied man will be required for reconstruction work at home.

In most of the important industries preparations are under way for America's real entry into world trade when peace comes. Foreign business is now financially possible on a large scale. The banking and monetary systems are now adjusted to its requirements. The building up of export business will tend to lessen internal competition with its resulting lowering of prices, and will go far towards stabilising the values of the products of American mills and factories on levels higher if anything than those prevailing to-day.

Our contemporary's conclusion is:

And so it is possible to enumerate one reason after another in favour of the contention that present prices are low—not high. If owners can be made to see that the really pertinent comparisons of costs are with the future rather than the past, building cannot fail to take on greater activity. Viewed in this light, present prices for building materials actually appear to be bargain prices.

American professional organisations are enthusiastically supporting the Government, which seems to be much more approachable and responsive than our own.

The American Society of Civil Engineers and the Board of Directors of the American Institute of Mining Engineers have passed resolutions backing up the position taken by President Wilson, and urging that universal military service be initiated at as early a date as possible. The American Society for Testing Materials has offered its services to the Government as a nucleus in the organisation and operation of a body of experts to look after the inspection and tests of materials in general. The American Waterworks Association has followed this example. The Society of Automotive Engineers has made a classification of members with reference to their qualifications for Government service.

The Executive Committee of the American Institute of Electrical Engineers issued early a circular to its membership in the United States, together with a data sheet, with a view to tabulating the experience and availability of its members for military or naval service as officers or enlisted men, and has appointed a Committee of National Defence. The engineers' clubs of Philadelphia and many other cities have tendered their services formally to the War Department or to the President, and, even before war was declared, were ready to undertake any branch of military or civil work that they might be called upon to do; and throughout the United States the professional organisations of all kinds were prompt to place their services unreservedly at the disposal of the Government.



A MODEL WAR FACTORY.

The accompanying illustrations show a compact model factory recently erected from the designs of Mr. A. Alban H. Scott. The offices and showrooms are arranged on the front, and a communicating gallery gives a complete view over the whole of the main work-room.

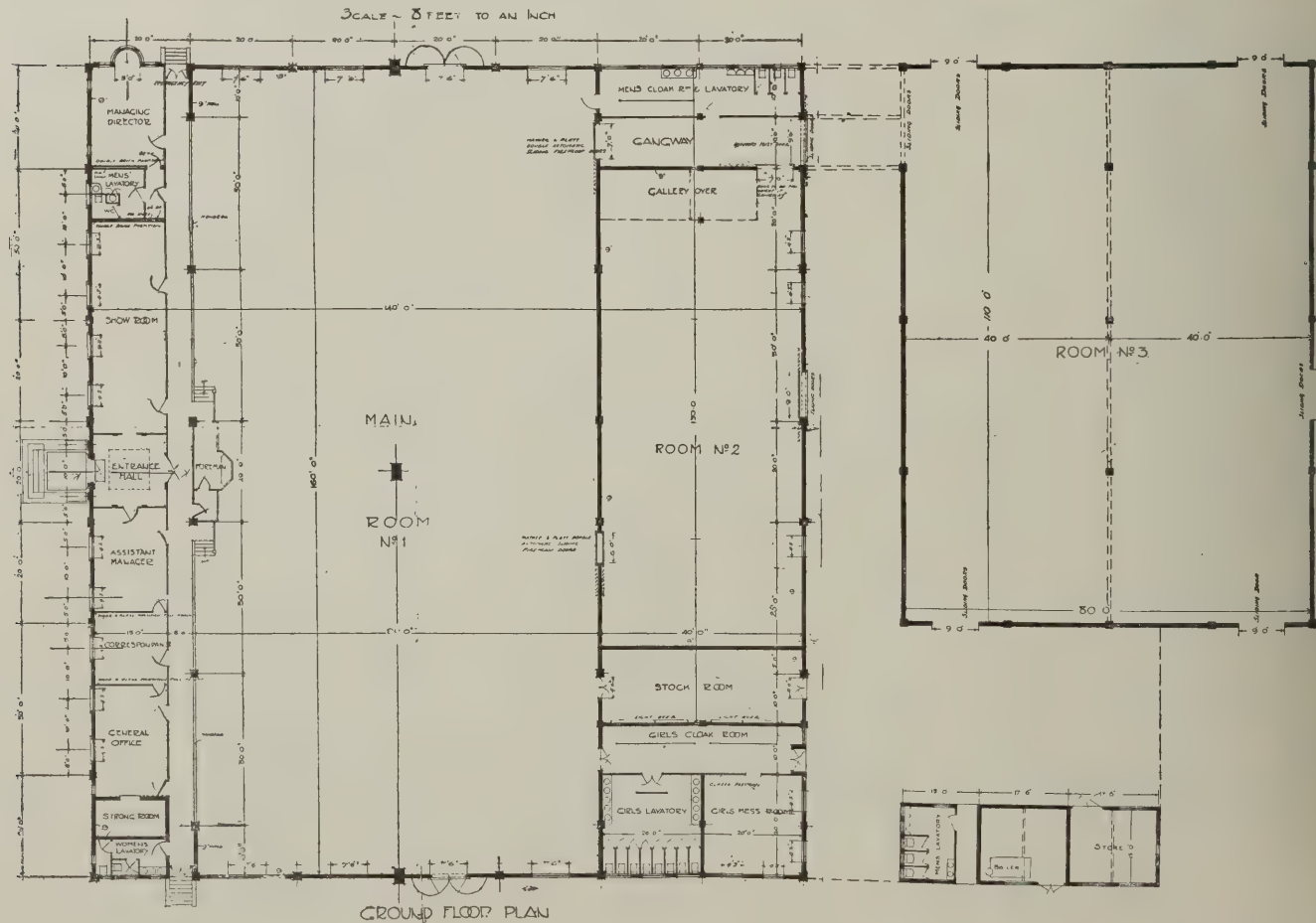
The foreman's office is shown on the plan

as adjoining the general offices, but as actually carried out (see interior photograph) it is placed on the other side of the room, so as to be more central for the other portion of the works.

The general framework of the building is of reinforced concrete, but the roof is constructed of steel. The main room measures 120 ft. by 80 ft., with only one central column. The roofs are covered with board-

ing and slates, the glazing being lead-covered steel bars.

The floors in the offices and gallery are laid with Doloment jointless paving, the main workroom being laid with wood boards placed on the fillets embedded in the concrete; rooms 2 and 3 are paved with metallic paving. The whole of this block forms a very complete and compact factory of moderate dimensions.



A MODEL WAR FACTORY. A. ALBAN H. SCOTT, ARCHITECT.



## PIECEWORK IN THE BUILDING TRADE.

The advantages of artisans being paid for their labour on a basis of piecework, says a writer in the current issue of the "Decorator" (edited by Mr. Arthur Seymour Jennings, F.I.B.D.), rapidly being more widely understood, and the system is now followed with complete success in many trades and industries. It benefits the employer by preventing waste of time, and is equally advantageous to the employee, as it acts as an incentive to him "speed up" as far as is compatible with good work. The man, therefore, who possesses talent as a quick worker gains a distinct advantage. He is not kept back by the slower workman, and his abilities find a fair market value. The difficulty of opposition by the unions on the plea of protecting the slower workman can be overcome by paying the men in gangs of from six upward, the total work done by such gang being allocated equally, or in any other way they may decide.

As already stated, the system is largely used in most industries, and there seems no doubt that it could be adopted with equal success in the building trade. As far as painters' work is concerned, it may be urged that the nature of the operations frequently will render piecework impracticable, but a closer examination of the subject will show that this is a false view to take. In drawing up an estimate of work, whether new or old, the master painter necessarily reduces every item to a unit, and by doing this he affords at once complete opportunity of arranging to pay for the labour on such units. Even the most intricate work other than the purely artistic, such as hand-painted ornament of an elaborate character, is reduced to so many superficial or lineal yards or

feet, and a proportion of the charge can be divided between labour and material.

Everything will, naturally, depend upon the prices fixed for the piecework, and here we may confidently look for guidance to other industries in which the system has proved successful. Before an estimate is drawn up, it would be necessary for the master painter to consult, say, two or three of the men appointed by their fellow workmen for the purpose, and to agree on the price of labour for every unit in the bill of quantities. One may suppose that the tendency would naturally be for the workmen to demand excessive prices, and for the masters to endeavour to get the very lowest, and so the pessimist might anticipate that a deadlock would ensue and the scheme prove a failure. In actual practice, however, it is found that with a little trouble a fair arrangement can be arrived at, because it must be remembered—and this is the whole crux of the subject—that if the price is high, the tender will stand no chance of being accepted. If, as will sometimes inevitably happen, certain items are found to be a little lower than they might have been, both employer and employee will suffer a little on that particular job, and the experience will be useful to them on the next tender they put in.

The fact must be admitted that the most important objection which can be urged against the piecework system is that it leads to scamping, unless the greatest care is taken to prevent it. The journeymen in their desire to increase their wages are likely to work so quickly that imperfect results ensue. But this objection is one which might be urged with equal force in connection with all industries in which the system is used. When the weak spot in a system is clearly foreseen it can be dealt with effectively. Probably the best plan so far as the building trade is concerned would be to make the foreman

on each job the judge of the quality of the work, and to pay him a generous weekly wage for the increased responsibility involved.

It is generally admitted that a great upheaval will follow the Declaration of Peace, and we are convinced that the solution of the problems which will presently face the master painter and master builder will be found in the adoption of the piecework system. It will require judicious handling in a spirit of "give and take"; it will bring the employer and employed closer together in their mutual interest; and it will, without doubt, eliminate to a very large extent waste of time, and put the workman on his mettle to produce the best that is in him.

## REINFORCED CONCRETE TRAMWAY TRACKS.

In order to ensure a scientifically perfect underbed for a particularly troublesome length of tramway track, the writer (Mr. R. E. Ford, A.M.I.C.E., acting borough surveyor of Doncaster, in an article contributed to "Road Reinforcement," the periodical issued by the British Reinforced Concrete Engineering Co., Ltd.) advised this corporation to lay cement concrete 8 in. in thickness, reinforced with No. 9 B.R.C fabric. The work was carried out by contract, and a considerable amount of interest on the part of engineers and the general public was displayed in its execution. In order to anchor the rails, holding-down bolts, with circular plates attached, were threaded through the reinforcing fabric at frequent intervals and surrounded with concrete. When the foundation had partially set the nuts securing the holding-down bolt to the lower flange of the rail were tightened up, and the rails were thus mechanically and effectively connected with the underbed. As the plates were



A MODEL WAR FACTORY: GENERAL VIEW OF INTERIOR.

A. ALBAN H. SCOTT, ARCHITECT.



firmly embedded on the underside of the reinforcing fabric, the whole track can be looked upon as homogeneous.

The length of track in question has now been laid twelve months, and although sufficient time has not yet elapsed to warrant a definite opinion as to its traffic-resisting capabilities being formed, it is nevertheless possible to state that no signs whatever of failure have asserted themselves, and the writer has sufficient confidence in the results attained on what is to be regarded as a trial length, to adopt the same system and the same materials in further work of reconstruction of considerably greater dimensions.

In conclusion, it would appear perfectly evident that the employment of B.R.C. Fabric to resist tensional stresses in concrete for foundation work is strictly and scientifically correct and practically possible, and that a future of usefulness lies before it as it becomes increasingly well known.

### OBITER DICTA ON ARCHITECTURAL EDUCATION.

The following pithy passages are extracted from the report, published in the May issue of the R.I.B.A. Journal, of the third informal conference, at which architectural education was the theme.

It will be seen that some of them are wise, some witty, some philosophical, and that occasionally all three qualities are combined. It is to be hoped that they do not suffer much from this separation from their context, which, in normal times, we should have been glad to reproduce. The headings to the paragraphs are our own.

#### *A Possible Pass.*

I am not exaggerating when I say that it might be possible to pass the Institute examinations without being able to distinguish between a lump of lime and a piece of plaster, or a malleable casting and a wrought scroll.—*Mr. H. V. Lancaster.*

#### *Composition a Constant.*

The Americans, in their adherence to the policy of studying precedent for internal and external character, have demonstrated two things—the first being that the underlying system of composition, at all periods, has never varied; and the second, the immediate necessity for augmenting the local Colonial tradition by drawing upon historical models. The Americans on this account are not plagiarists; they are scientists, with all the system of the Germans, but free from the doctrine of the Pikelhauben.—*Mr. A. E. Richardson.*

#### *The Indescribable Something.*

The possession of the divine afflatus, or inflatus, or inspiration, or whatever it is, is the indescribable something which knits us together. It is that which filled the soul of the youngster with enthusiasm for the work of Norman Shaw: we knew nothing about his construction, or the masterly way in which he handled his clients, but we were charmed by the inexpressible art of his designs. And it is the same always; it was also the same with Street.—*Professor Beresford Pite.*

#### *Conference and Report.*

My last suggestion is that the heads of the recognised schools might meet annually to discuss details of curricula and other matters, and report to the Board of Architectural Education—some-what on the lines of the Headmasters'



A WOOD STORE BUILDING. A. ALBAN H. SCOTT, ARCHITECT.

Conference, which, I think, meets once a year and reports to the Board of Education. Possibly, also, if some such meetings were instituted, the teachers of architecture in the schools of art throughout the country might also be invited to attend.—*Professor F. M. Simpson.*

#### *The Essential Thing to Teach.*

Others can build, but the only person who can design is the architect. He arranges structures to serve their purpose and to express ideas; if he does not do it, no one else will. This seems to be the one thing that will justify his existence in the future, and therefore the essential thing to teach.—*Mr. A. R. Jemmett.*

#### *The Complete Architect.*

The education of the architect in the past has been lacking in that it has not made of him a scientific man. The student has not been made to appreciate the fact that he need be none the worse an artist because he has a knowledge of the many branches of science that are required by an engineer, for example, to achieve success—namely, mathematics, chemistry, physics, mechanics, business, economics, ethics. Scientific training will make him precise, systematic, able to analyse and synthesise.—*Mr. H. Kempton Dyson.*

#### *"Try Not the Pass."*

To my mind, practically the whole of the architectural training in this country is affected by the fact that these qualifying examinations exist, and that most of the young students are working with the avowed intention of trying to pass them.—*Mr. Robert W. S. Weir.*

#### *Tall Hat and Tall Talk.*

I think Mr. Richardson calls art much that I call science. The concept that he talked about is of vast importance. Of course, we are all out after conception, but how is the conception to be reached? That is the point. It is not to be reached by wearing a tall hat, or by talking æsthetics; it is to be reached the last thing through knowledge, through analysis, and through training.—*Professor Lethaby.*

### A WOOD STORE BUILDING.

The question of timber storage will, as the result of current events, no doubt receive much more attention in the future than was thought necessary when the material was comparatively cheap and plentiful, and the present contribution towards the solution of the problem is therefore additionally welcome. Formerly it was only timber of the more costly kinds that was thought worth the care for its preservation and seasoning implied in this special building. For the moment, however, any kind of wood is worth the best accommodation that can be afforded it, and the lesson thus inculcated should have the permanent effect of rendering specially designed wood stores the common rule rather than the rare exception.

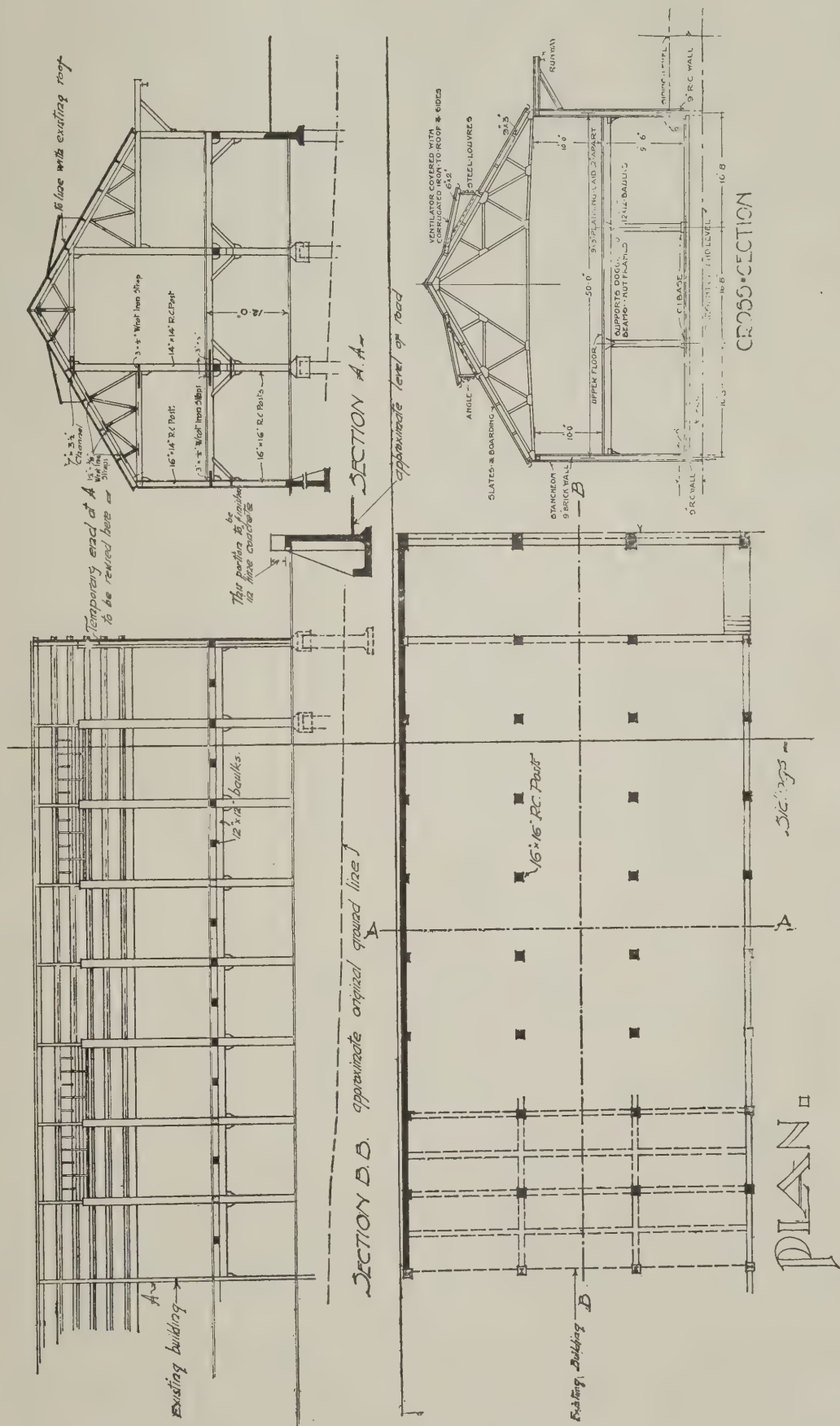
The wood store shown in the accompanying illustrations is a particularly interesting piece of work. The first portion was erected with steel roof trusses of 50 ft. span, but when, later on, it was desired to build an extension, steel for roof principals was not easily obtainable. Accordingly it became necessary to omit the steel roof trusses and side steel columns, and reinforced concrete columns and wood trusses were substituted.

It was considered desirable to preserve the same outline of roof, and the illustrations show how the difficulty was overcome, the same elevation being maintained although an entirely different method of construction has been adopted.

The building contains ground and first floor, both being used for timber drying. In alternate bays, shutters have been provided so that the whole space can be opened, and in the remainder of the bays louver shutters are provided so that they can be opened and closed on a similar principle to the old mill louveres, as often seen throughout country districts in old weaving sheds, drying-rooms, etc. The building is roofed with slating.

The levels and heights of the floors have been arranged so as to form convenient heights for loading and unloading from the railway siding, which runs parallel with and close to the building. Mr. A. Alban H. Scott was the architect.





A WOOD STORE BUILDING: PLAN AND SECTIONS. A. ALBAN H. SCOTT, ARCHITECT.

## BOOK NOTICES.

*"The Planning of the Modern City."*

When the author of "The Planning of the Modern City" asks, in his introductory sentence, "Is there any occasion for another book on the general subject of City Planning?" he gives hostages to fortune. He tempts one to prompt adoption of the Parliamentary formula, "The answer is in the negative." But the unwisely provoked repartee would be unjust to him. No doubt the "literature" of the subject is rather redundant; but Mr. Lewis, in assuming that most of it "has been contributed either by architects, who emphasise its architectural or artistic side and appear to consider it an architectural problem, or by students of city government, who seem to regard it as an administrative problem," seems to discount too liberally the activities of civil engineers in our own country. It may be, however, that though they are doing more than the architects they are writing less, and that hence there is plenty of room for a book devoted almost entirely to the engineering aspects of city planning.

Naturally enough, Mr. Lewis holds that "the fundamental problems of city planning are, and from their very nature must be, engineering problems." There is no need to contest the point. Road-making, sewerage, water-supply, lighting, are admittedly basic considerations, and neither the architect nor the students of city government will dispute the engineer's interest in them. Provided other interests, no less vital if less fundamental, are not neglected, the engineer's functions will be suffered gladly, and a book showing how he sets about them will be surely welcome to all who are concerned in town-planning studied either sectionally or in the fulness thereof. Mr. Lewis has accomplished his task with much thoroughness, going to many countries for his examples, dealing in due sequence with every phase of the problem, and discussing it with, we fear, overmuch diffuseness for the engineer, although this fulness will be welcome to that larger public which, especially in America, manifests a growing interest in practical civics. This book will resolve their doubts and satisfy their enquiries, not to say their native inquisitiveness; for it affords a valuable conspectus of the aims and achievements of the town-planner, to whose library it will be promptly and gladly added, if only because it presents a concise illustrated history of the movement. There are eighty-seven plates, and sixty-two illustrations in the text, and between them they afford an excellent means of studying and comparing many of the great schemes that show typical treatment of various conditions, and the many views of buildings, parks, town and country roads, will also be found profitable for study.

"The Planning of the Modern City." A Review of the Principles Governing City Planning. By Nelson P. Lewis, Member of the American Society of Civil Engineers, etc., etc. Pages xvi. + 424, 6½ in. by 6½ in., price 76s. 6d net. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Ltd.

*A South Devon Paradise.*

To the cheap and excellent series of "The Homeland Handbooks" there has just been added one of the very best. Its author, Mr. Arthur Henry Anderson, is no jaded and perfunctory compiler of guide-books, but is genuinely interested in the history and the scenery, the archaeology and the architecture, the local colour and the local worthies, of the fascinating corner of the map which he has been wisely

invited to describe. Natives of Kingsbridge were Dr. John Wolcot ("Peter Pindar"), who, Mr. Anderson notes, was buried, by his own desire, near Samuel Butler, the author of "Hudibras," in St. Paul's, Covent Garden; James Lackington, the shoemaker who founded in Finsbury the bookshop which he called the "Temple of the Muses"; William Cookworthy, "whose name is associated with the discovery of Cornish china-clay"; and Colonel George Montagu, who has been called the Father of British Ornithology. For Salcombe it has been claimed that it was here that Tennyson, in his eighty-first year, wrote "The Crossing of the Bar," "the crown of his life's work," but Mr. Anderson is able to show, on the evidence of Lieut. Com. Ashley A. Froude, the historian's son, that the claim cannot be substantiated. Froude made Salcombe his home for many years, however, and he died and was buried there in 1894. There are many interesting buildings in the district, and to these Mr. Anderson does full justice, in one of the most readable and companionable little guides that we have ever seen.

The Homeland Handbooks. Kingsbridge, Salcombe, and the Kingsbridge Estuary. By Arthur Henry Anderson. With Town Plans and Illustrations from Photographs, etc. London: The Homeland Association, Ltd., 37 & 38, Maiden Lane, Covent Garden, W.C., and Frederick Warne & Co., London and New York. Price 7d. net.

## NEWS ITEMS.

*Redecoration of Aldershot Hippodrome.*

Messrs. John Tanner and Son, of London and Liverpool, have been entrusted with the whole of the redecoration of the Aldershot Hippodrome, for Mr. Clarence Soules.

*A Correction.*

We regret that, in an article on "Trough Lavatories for War Factories," published in our issue for April 18, the address of Messrs. Pickup and Co., Ltd., was wrongly given. Messrs. Pickup's correct address is Pearl Brook Works, Horwich, Lancs.

*Waterproofing a Basement.*

We are asked to state that the basement of the Masonic Hall at Grimsby, which had been a continual source of trouble owing to flooding after heavy rains, has now been remedied with waterproofed cement. The makers of Pudlo (the water-proofer used) will be pleased to give advice to any interested readers on making watertight any structure which may be subject to dampness or flooding.

*"The Sprinkler Bulletin."*

Messrs. Mather and Platt, Ltd., announce that in view of the national necessity for economising paper, the shortage of supplies, and the increasing labour difficulties in the printing trade, they have decided to discontinue, for the present, the issue of the "Sprinkler Bulletin," which it has been their pleasure to distribute every quarter. They hope that happier circumstances may soon render it possible to resume publication.

*Industrial Developments for Notts.*

At a meeting of the Trent Navigation Co., Mr. Jardine, M.P., expressed his intention to erect a sugar beet factory near Newark, capable of dealing with a thousand tons of beet daily. An estate of 5,600 acres has been already purchased by the British Sugar Beet Growers' Society, with 8,000 acres eventually available. It is estimated that 80,000 tons of beet could be produced, yielding 11,200 tons of sugar

annually. Further, a site of 400 acres has been acquired three miles from Nottingham by an influential syndicate, intending to establish concrete works, engineering and chemical works, a low-temperature coal carbonisation works, and power plant for selling current at a halfpenny per unit.

*Memorial Window at Yeovil.*

A memorial window has been placed in Yeovil Parish Church to the memory of two distinguished officers—Brigadier-General C. B. Prowse, D.S.O., who died at the head of his brigade in the first battle of the Somme, and Captain Cecil Irby Prowse, R.N., who went down in his ship, the Queen Mary, at the Battle of Jutland.

*War Monument for Darfield.*

At a public meeting held at Darfield it was agreed that a war memorial should be provided, and that it should take the form of a monument to be erected on a public site, adjacent to the highway. A representative committee was appointed to prepare a scheme. Mr. G. Dickinson, chairman of the Darfield Urban Council, said he was authorised by that body to offer a very eligible site immediately opposite the Council offices, and he added that the Council had power both to erect and maintain a monument of the character proposed.

*Bell's United Asbestos Co., Ltd.*

It is announced that the directors of this company have resolved, in view of the audited accounts to December 31, 1916, and after providing for Excess Profits Duty and Munitions Levy, to recommend to the shareholders, at the general meeting to be held on May 31, 1917, the payment of a balance dividend of 1s. 6d. per share on the ordinary shares of the company, and a bonus of 6d. per share, which, with the interim dividend paid in October last, makes a total distribution of 15 per cent. for the year. The amount to be placed to reserve is £20,000. The amount to be carried forward is £8,214.

The Pretoria Cement Company is doubling its output capacity at a cost of £45,000, consequent on the demand for houses and a revival in the building trade, notwithstanding the enhanced cost.

By a majority of thirteen the Newcastle City Council resolved to make application to the Local Government Board for power to sell as freehold building land thirty acres of the Walker Estate of the Corporation.

Mr. A. E. G. Braithwaite, of Braithwaite and Kirk, engineers, Westminster, has retired from the business, which is being continued under the title of Braithwaite and Co.

Enniscorthy Rural Council have accepted a tender at £785 for the rebuilding of two arches of Clohamon bridge on the main road from Ferns to Newtownbarry, which were destroyed by December's floods.

According to the first report of the Northern Centre Demarcation Committee for the Building Trades, just issued, Councilor Stephen Easton, Newcastle, has been elected chairman for the ensuing year.

Towards the Printers' War Memorial, in connection with the Caxton Convalescent Home, Limpsfield, Surrey, nearly £500 has been raised. The memorial will take the form of adding a new wing.

Mr. Hayes Fisher (Parliamentary Secretary to the Local Government Board) told a deputation from the National Association of Insurance Companies that after the War there would be a shortage of half-a-million houses in England and Wales.



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

MAY 30, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1169.

#1169 Arch.  
SIR ALEXANDER RICHARDSON BINNIE, who has died in retirement in Devonshire at the age of seventy-eight, had almost outlived the great reputation which was his while his achievements were still fresh in the public mind. To the present generation it came as news, in the newspaper notices of his career, that to him Londoners are indebted for the reform of their fine main drainage and waterworks schemes, for the widening of the Strand and the laying out of Aldwych and Kingsway, for the tunnelling of the Thames at Blackwall, and for many minor works of public utility. It was in 1899 that the great main-drainage scheme, as recommended by Sir Benjamin Baker and Sir Alexander Binnie, was adopted by the London County Council, who have devoted (if the £737,000 spent in 1903 on stormwater drainage works carried out by Sir Maurice Fitzmaurice be added to the account) more than four millions sterling on an achievement that was certainly cheap at the price, considering that it has made London the healthiest city in the world. From 1862 to 1866 Binnie was engaged on Welsh railways. From 1868 to 1874 he served in the Indian Public Works Department, when he constructed the Nagpore Waterworks. As engineer to the city of Bradford (1875-90) he constructed the Bradford Waterworks; and from 1890 to 1901 he was chief engineer to the London County Council. These were, in an engineering sense, very fruitful years for London, with whose awakening from a long lethargy the name of Alexander Binnie must always be closely associated.

\* \* \* \* \*  
In commenting last week on the premature erection of public war memorials, we ventured to suppose that the protest against them by the Bishop of Truro and Professor Edward S. Prior was needless. It seems that we were mistaken. Several townships, we are informed, are already arranging general memorials. In the borough of Lewisham, for example, a site has been chosen and a design has been prepared and is, we understand, on view. It is estimated that this monument is to cost £300, and the public are being asked to subscribe that modest amount. Ten times the money would hardly do justice to so great an occasion in so large a borough as Lewisham; and, supposing the monument is to enumerate the names of the fallen, it could hardly be adequate for that purpose. Most of the "gallant West Kents," who have so highly distinguished themselves in the war, have come from this district, which has also supplied a very large number of recruits to other regiments, and to the Navy. We could wish, therefore, that the Lewisham project should be postponed until the war is over, when it may be possible to erect a monument more worthy of the borough and of its gallant sons, a complete record of the names of those who have made the supreme sacrifice being, we take it, the most important consideration in such a case, always providing that the lists of the brave shall have an appropriate setting. It is with extreme reluctance we say a single word that may seem to deprecate so laudable an impulse; but, being fully sympathetic towards the object, we are anxious that it should be attained in a befitting manner.

\* \* \* \* \*  
Lewisham, it is certain, is single-hearted in this endeavour; but it is to be feared that this cannot be said unreservedly of every such project. One seems

to see, for example, in certain grandiose proposals at seaside resorts, some slight sophistication of the purest motives. Pride in one's town is no doubt legitimate and laudable; and it may be no less worthy a sentiment that prompts what seems like rivalry between seaside resorts to put up costly monuments and to do it soon. But, in such a matter, an eye to advertising values is rank sacrilege, and even a momentary suspicion of it must be at once scouted. Yet human motives are nearly always mixed; and if some few of the less sentimental members of a seaside town council initiate or support a motion for lavish expenditure in the belief that they are promoting a "sound business proposition," it is solely their affair that they are doing the right thing in the wrong way; for they are overwhelmingly outnumbered by those whose generosity and compassion are entirely free from taint of guile. This, however, is a question of ethics, and our chief concern is with the artistic side; on which, however, there is for the moment nothing to add to the caution given by the Bishop of Truro that haste in the erection of public memorials is to be deprecated on this ground as well as for the reasons of expediency to which attention has been drawn by the Bishop and Professor E. S. Prior.

\* \* \* \* \*  
Llandudno (which is in no way involved in the foregoing paragraph) seems to be in favour of postponing action. It appears that a North Wales Heroes' Memorial campaign is afoot, and Llandudno, invited to take part in it, does not altogether see its way clear. This is rather a pity, for the campaign, so far as its objects are understood, deserves to succeed. It is attempting to raise a fund for the erection and equipment of science buildings at Bangor, which, as a member of Llandudno Urban District Council explained when the subject was under debate, would be not merely a memorial to the dead but would also be of great benefit to the living, and particularly to the children of the fallen heroes of North Wales, who would have the right to free education in the memorial buildings. "He regarded that as a very practical method of commemorating their sacrifice," and no one ventured to contradict him. With Llandudno the question was of ways and means. Seaside places have been hard hit by the war, and Llandudno is no exception, though perhaps Wallasey is, for there it is proposed to erect a monument on the promenade, at a cost not exceeding £2,500. Llandudno, however, has referred the campaign proposal to its Finance Committee, which, if true to type, may be confidently trusted to do nothing upon rash impulse.

\* \* \* \* \*  
After occupying Mr. Justice Darling's Court for more than a week, the case in which Mr. Huntington claimed the return of £20,000 which he had paid to a firm of dealers for a picture sold to him as a Romney came to an abrupt end last Wednesday, when the defendants agreed to take back the picture and refund the money. In the course of the trial documentary evidence was discovered which proved beyond reasonable doubt that the picture did not represent Mrs. Siddons and her sister, but the Ladies Horatia and Maria Waldegrave, and was not painted by Romney but by Ozias Humphry. These facts were new to the defendants, whose good faith was never in dispute.



They produced many eminent expert witnesses declaring most emphatically that in their opinion the picture was a genuine Romney, and, when the documents were unearthed, accepted the evidence with all imaginable grace and generosity. It is by no means surprising that there should have been a mistake in the attribution. Ozias Humphry was a close friend of Romney's, and the two were in Italy together. Nothing could be more natural than that, in setting aside his miniature-work to essay a large canvas, he should closely follow Romney's method. Indeed, is it not highly probable that Romney, in coaching his friend, may actually have put in with his own hand some characteristic Romney touches? If he did this, the resultant picture might well deceive the very elect, as indeed it did. For these reasons, we are not prepared to share the view that experts are easily deceived; because, as we have ventured to suggest, the picture may be fractionally a Romney after all. Parallel cases in the attribution of architecture are fairly common. Who, for example, can disentangle with certainty the work of Inigo Jones from that of his kinsman and pupil Webb? And are we not sometimes in the dubiety which says, "The voice is the voice of Christopher, but the hand is the hand of Hawksmoor"? But one never hears of a building being returned on the hands of its vendor because of an erroneous attribution of authorship!

\* \* \* \*

We greatly regret to learn that Mr. H. Heathcote Statham, F.R.I.B.A., whose third son, Lieutenant Noel H. Statham, fell in the war last February, at the age of twenty-four, is now in great anxiety as to the fate of his youngest son, Second Lieutenant Arthur Statham, of the Rifle Brigade, who is officially reported "wounded and missing." Arthur Statham's commanding officer, however, has sent a letter to the parents of the youth (he is but nineteen years old), stating that he was not dangerously wounded, and that in all probability he is, with some other wounded officers, a prisoner in the hands of the enemy. He is an expert signaller, and his commanding officer writes: "He was given a special job to do in the operations on April 9, and I found him at the objective an hour and a half after our attack, coolly working away—which work was later commended by the Brigade Signalling Officer." Unfortunately, news of British prisoners is often cruelly delayed, and for their friends the interval is naturally an agony of suspense. We trust that Mr. and Mrs. Statham will not have to wait long for the best of good news.

## CORRESPONDENCE.

*The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents, who are asked to be brief, and to write on one side only of the paper. Every communication must bear the name and address of the sender.*

### *Scottish Housing.*

To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIRS,—Mr. Algernon Hallam's views on housing have my sympathy, but he is probably working for a race which is amenable to new ideas and conditions.

In the North things are different, for the Scots, with all their many good qualities, are the most obstinate race in these islands. They are perfectly content with the conditions which satisfied their grandparents, and, seeing that they still remain the hardiest portion of our population, it is not surprising.

Nothing will prevent the working and lower middle classes from sleeping in their living-rooms, and even people occupying houses up to £80 rental, and keeping one servant, think nothing of allowing that unfortunate creature—as it seems to Southerners—to occupy for sleeping purposes a small apartment off the

kitchen which is little better than a dungeon, since it rarely has ventilation or direct light. In the same household the table crockery will be washed in the kitchen or scullery sink in which the servant performs her ablutions, when these are occasionally necessary.

Housing reformers need not worry themselves about Scotland, for there is no field for their labours.

A LOOKER ON.

[This letter comes from somewhere in Scotland, and is duly authenticated with the writer's name and address, otherwise we should have declined to print such a sweeping accusation. We trust that our correspondent is generalising rather too freely from what seems to us to be exceptional experience. Our own, at all events, happens to be totally different; but if conditions are commonly as bad as he represents them to be, his final sentence is a glaring *non sequitur*. Surely the mission of the housing reformer is mainly to the unconverted.—EDS. A. AND B.J.]

## HERE AND THERE.

TO see the newspaper heading "Paste Substitutes," is to visualise momentarily the false gems of the cheap novel; but in the present instance the reference is to substitutes for the paste of the paperhanger. He likes to make it of wheat flour, adding a little formalin to keep it sweet; but, as we have previously recorded, there has been a great outcry about his business use of foodstuffs in war-time. Not only has he been caught in the act of using flour for paste, but he has added to the enormity of this offence by persisting in his primitive practice of cleaning down old wallpaper with dough and bread—so the allegation goes, though one can hardly believe it; more especially since Mr. John Line, president of the United Wallpaper Merchants' Association, has taken the trouble to protest in the newspapers "that many misleading assertions have been made respecting the position of the wallpaper trade in relation to the action of the Food Controller." Lord Devonport's department, Mr. Line continues, has assured the association that there is no desire to interfere with the interests of the trade "otherwise and excepting in so far as the reservation of foodstuffs for human consumption is concerned." This, being interpreted into unofficial English, seems to mean that flour in its various phases may not be used by the paperhanger, who, however, if the Food Controller deprives him of his paste, and some other sort of Controller withholds his paper, would seem to suffer some discouragement in his work. But, happily, he can do without paste; for, as Mr. Line says, "the hanging of wallpaper does not necessarily involve the use of a single particle of food"; and it seems that wallpaper stocks are in no danger of immediate exhaustion. All, therefore, is well with the paperhanger, who deserves this beatific state: for Mr. Line assures us that "throughout the length and breadth" (a delightfully appropriate expression) "of the country our trade is loyally carrying out the Food Controller's wishes."

\* \* \* \*

A kind of paperhanging that seems somewhat in conflict with various official "wishes" is that which is disfiguring our public buildings and monopolising the hoardings from which the unofficial billposter has been solemnly warned off. We trust that the Food Controller, or any other Controller concerned, would, upon challenge, be able to lay his hand upon his heart and declare that all this official paperhanging is being conducted without using "a single particle of food." That it involves the consumption of many acres of paper is manifest; and whether or not paste substitutes are insisted upon for the affixing of bills about a hundred feet long, with lettering four feet high, bearing usually



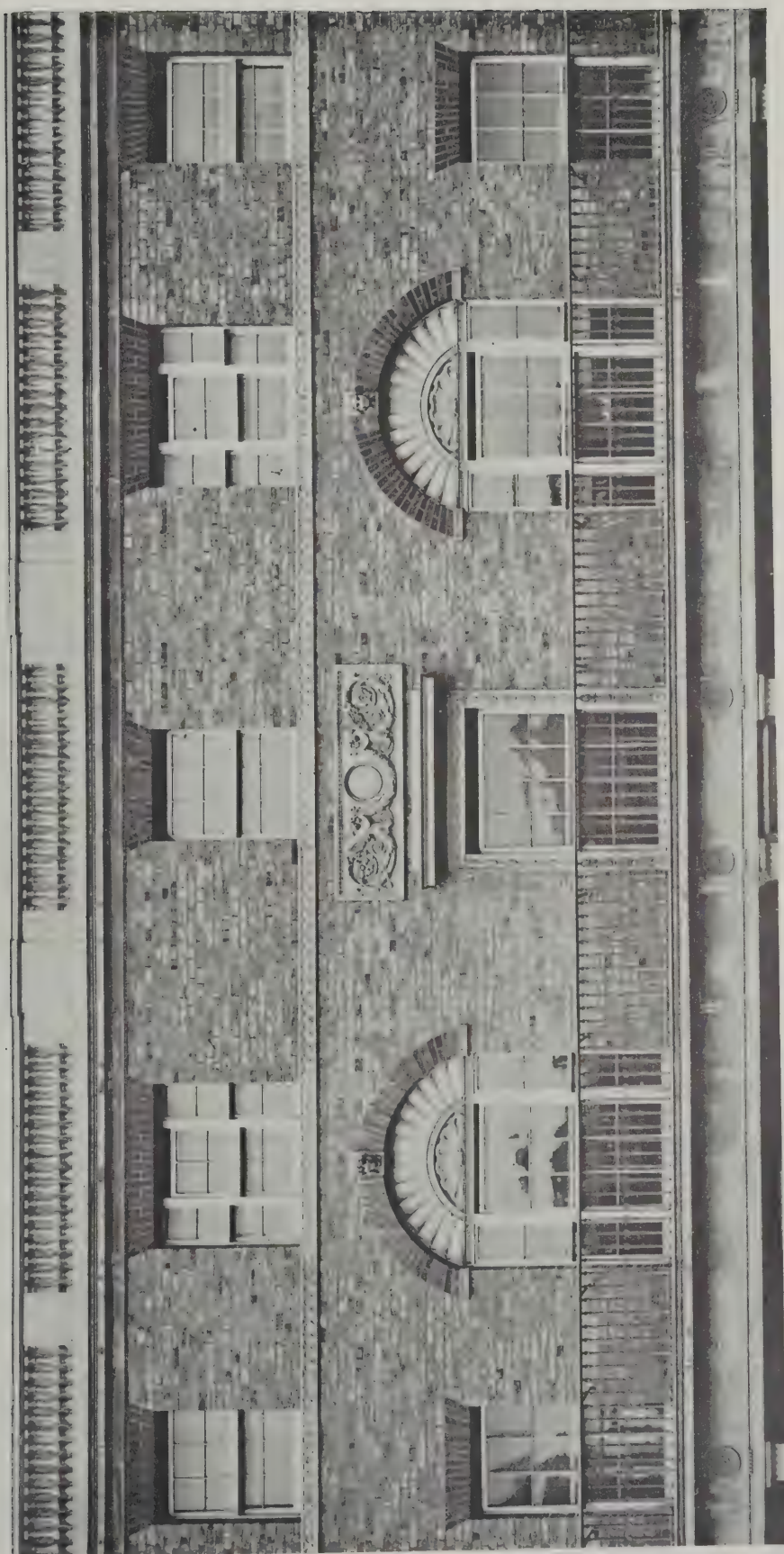


MODERN AMERICAN ARCHITECTURE (SERIES II.). XXXIII.—OFFICES OF THE MEMBERS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES CAPITOL GROUP, WASHINGTON.

CARRÈRE AND HASTINGS, ARCHITECTS.







CURRENT ARCHITECTURE (SERIES IV.). XXII.—DETAIL OF FAÇADE IN UPPER KENNINGTON LANE, DUCHY OF CORNWALL ESTATE, KENNINGTON.

ADSHEAD AND RAMSEY, ARCHITECTS.





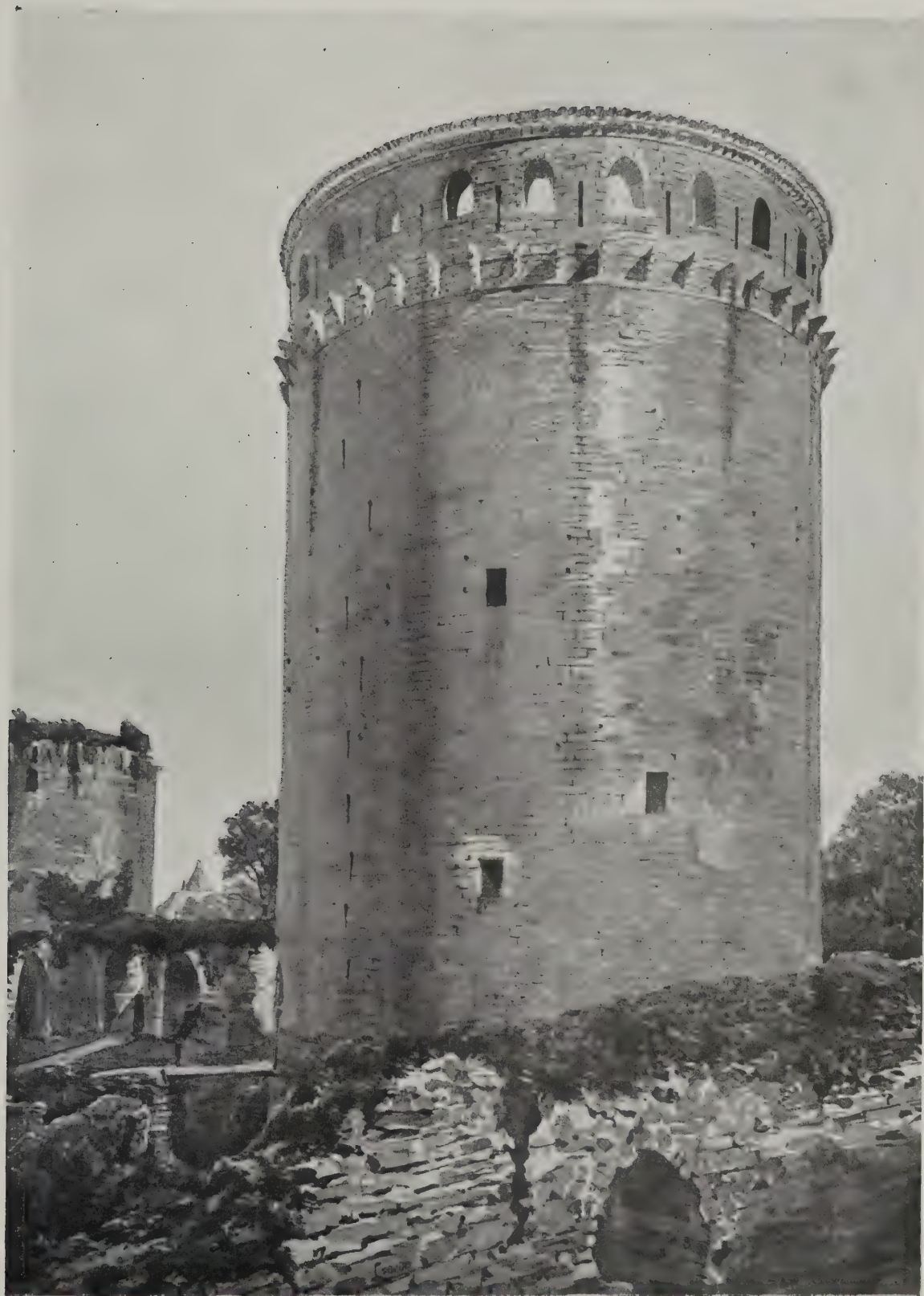


COMMEMORATIVE COLUMNS AND OBELISKS. IX.—THE JULY COLUMN, PARIS.

ALAVOINE AND DUC, ARCHITECTS.





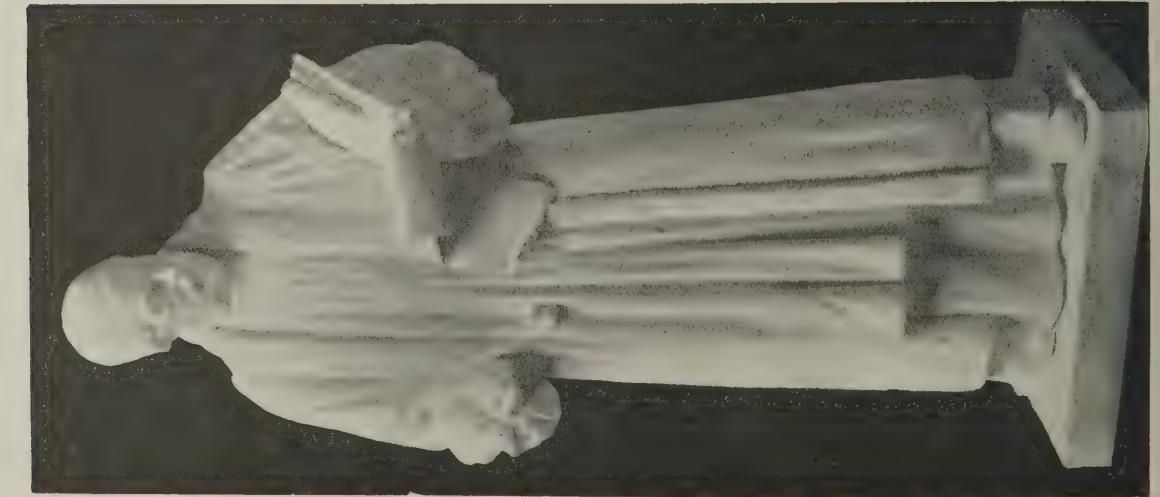


ARCHITECTURAL DRAWINGS AND SKETCHES. 1.—THE GREAT KEEP. CHÂTEAU DE COUCY.  
FROM A WATER-COLOUR DRAWING BY THE LATE R. PHENÈ SPIERS.





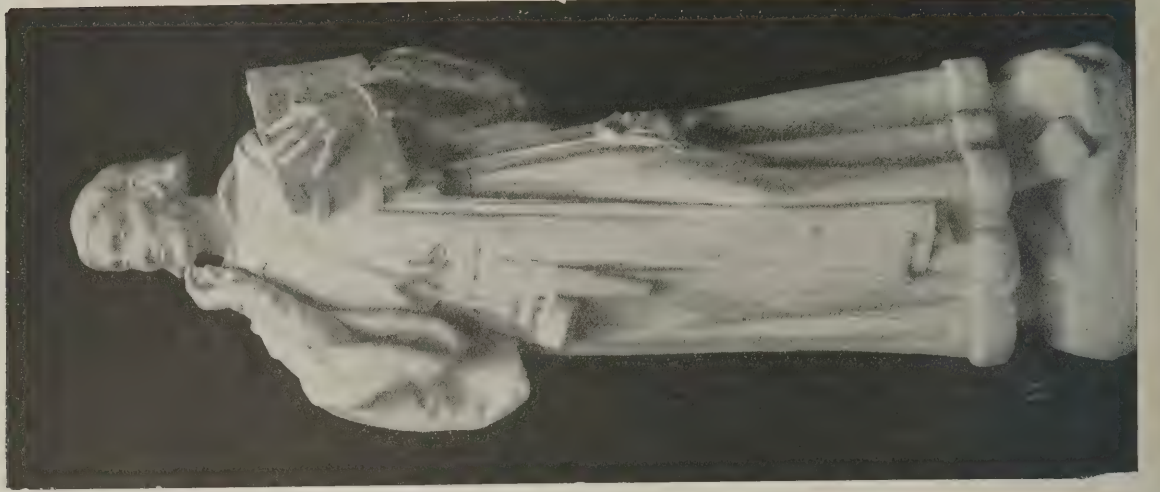




BISHOP MORGAN (Died 1664).  
T. J. Clapperton, Sculptor.



LLEWELLYN THE LAST PRINCE OF WALES (Died 1282).  
Henry Pegram, A.R.A., Sculptor.



GIRALDUS CAMBRENSIS (1146-1223).  
Henry Poole, R.B.S. Sculptor.





ST. DAVID (Sixth Century).  
Sir W. Goscombe John, R.A., Sculptor.



WILLIAMS PANTYCELYN (1717-1791).  
L. S. Merrifield, Sculptor.



KING HOWELL THE GOOD (Died 950).  
F. W. Pomeroy, A.R.A., Sculptor.

MODERN BRITISH SCULPTURE. I.—STATUARY FOR CARDIFF CITY HALL, EXHIBITED AT THE ROYAL ACADEMY.





some message in deprecation of extravagance, or some urgent exhortation to economy, it is difficult to suppress the reflection that example is sometimes more potent than precept; and that the example in this instance is blatantly bad. It is not an example either of economy or of good taste to plaster the plinths of public monuments and the podia of public buildings with posters of enormous size and vulgar design. In war-time there is much that needs must be patiently endured; but this monstrous irruption and encouragement of bad taste is a gratuitous addition to the burden.

\* \* \* \*

Is there in existence any book on the history of wall-coverings? It would make an entertaining volume, because "the walls have ears," and some sanguine pseudo-scientist has proclaimed his belief that the sound-waves absorbed by walls might be extracted by some delicate instrument like a phonograph, only more so. I trust that this weird notion may never materialise; I had as lieve that means were found to "make the whispering gallery shout." The inconvenience of vocal walls was sufficiently shown in the tragic history of Pyramus and Thisbe ("Midsummer Night's Dream" version). Besides, it must not be overlooked, with respect to ordinary walls, that the plasterer gets the first chance at them, and the records he would make while they are most impressionable would complicate the issue to an overpowering degree. Indeed, listening unwillingly to this craftsman's critical comments on intractable and capricious materials, I have sometimes wondered that the walls have not broken out into purple or hectic patches. If, however, the time should ever arrive when the dream of the pseudo-scientist came true, and more information could be extracted from the walls than ever was got through that "Dionysius's Ear" which recently Mr. Gerald Balfour has dragged into such uncanny notoriety, old wallpaper would find a new market. Carefully stripped from the walls of the homes of celebrities, it would fetch fabulous prices; the idea being to run it through a machine of extreme delicacy and discrimination which would disentangle the various speeches that had been imposed upon it. One rather suspects that our sanguine pseudo-scientist has forgotten that the paper would be a multiple palimpsest, from which the various utterances absorbed would want sorting out. Another sanguine pseudo-scientist (his name is legion) takes the view that the palimpsest could be read and interpreted through some sublime development of the X-ray photographic apparatus; but, on the whole, it would seem that as a means of prying into speech in camera the keyhole is in small danger of losing its ancient supremacy.

\* \* \* \*

Wayward fancy has led me too far from the point that someone possessing the right credentials could make a very interesting book of the history of wall-coverings. It could be seasoned *ad lib.* with historical and literary gossip, while specimens of arras, tapestry, damask, and other decorative fabrics, and of some of the rare wallpapers that have transcended commercialism, would supply an exhilarating art element. If the author were industrious as well as entertaining (a rare combination of virtues, I admit) he would perhaps find out for us exactly when wallpaper was first introduced into this country, whence and by whom. Did we get it through the Dutch, who were then the great paper-makers of Europe? And is it true, as we are sometimes told, that the Dutch got the idea from India, and that the first papers were so close an imitation of textile hangings that the difference could not be detected by the eye? These imitation hangings (is not the word paperhanger a survival of the time when paste was out of the question?) must have been well known in Shakespeare's day; for Falstaff, if I remember rightly,

insinuates to his hostess a preference for her paper hangings as compared with the textiles of which they were a cheap imitation. But, as many a Georgian interior can testify, it was not until quite late in the eighteenth century that wallpaper assumed over wallpanelling a supremacy that it did not deserve until William Morris showed how it could be made beautiful. I think that book ought to be written.

DIOGENES.

## THE PLATES.

*Offices of the Members of the House of Representatives, Washington.*

THIS building, designed by Messrs. Carrère and Hastings, is a unit of the United States Capitol group, and is matched by a similar composition on the opposite side of the great open space in front of the Capitol. In their designs the architects have produced two buildings which are remarkable for their skilful planning, dignified composition, relation to the dominating element of the group, justness of scale, and refinement of detail. Nothing could have been easier than to make them great showy structures that would have out-rivalled the Capitol itself and reduced the adjacent Congressional Library to comparative humility. Messrs. Carrère and Hastings have wisely avoided spectacular display, and have produced two buildings which, although subordinate to the Capitol, have a very definite individuality of their own.

*Detail of Façade in Upper Kennington Lane.*

Messrs. Adshead and Ramsey's delightful work on the Duchy of Cornwall Estate at Kennington is the result of close study of a local tradition which, carefully modified, has been admirably adapted to modern requirements. A most attractive detail view of the upper storeys to some shop premises in Upper Kennington Lane is reproduced on one of the plates in this issue.

*The July Column, Paris.*

The July Column (Alavoine and Duc, architects) stands on the site of the old Bastille, and was built as a memorial to the six hundred and fifteen combatants who fell in the struggle of July 27th, 28th, and 29th, 1830. The column is adorned with the names of all the victims, whose remains are immured in the vaults below. The summit of the column is crowned with a statue representing the genius of Liberty standing on the globe. The column is 154 feet high, and rests on a substructure of white marble. It was completed in 1840.

*The Great Keep, Château de Coucy.*

The Château de Coucy was described by Viollet le Duc as "the most beautiful fortress of the Middle Ages which existed in Europe." Its antiquity and historical interest were an offence to the Germans, who, with their usual vindictive criminality, blew it up before retiring to the Hindenburg Line. It was a ruin before the war, but now it is only a jumbled heap of rubble fragments. We publish on one of the plates in this issue, by the courtesy of Mr. Walter L. Spiers, a reproduction of a water-colour drawing of the Great Keep, by the late Mr. R. Phenè Spiers, who made a study of the wonderful old fortress some years ago.

*Sculpture at the Royal Academy.*

Particulars of these fine specimens of modern sculpture are given in the article on "Cardiff City Hall Sculpture at the Royal Academy," published on pages 254 and 255 of this issue. Our photographs were taken when the statuary was on exhibition at the Grafton Galleries.



## CARDIFF CITY HALL SCULPTURE AT THE ACADEMY.

IN our notice of the sculpture at this year's Royal Academy Exhibition we remarked (May 9, p. 221) that the exhibition would have been much the poorer but for the inclusion of several casts of the statuary that has been executed for the adornment of Cardiff City Hall. This week we have much pleasure in reproducing, on our double-page plate, six of the casts now on exhibition, and we give also a description of them derived from an article in the "Architectural Review" for October, 1916. Below are shown a view of the staircase hall and a plan indicating the positions occupied by the respective figures or groups. In the following descriptions the statues illustrated in our plate are indicated by an asterisk. The staircase hall is one of the most striking features of the Cardiff City Hall. There are two broad flights of stairs leading up from the vestibule on the ground floor to the large landing which forms an ante-hall to the council chamber on the first floor, this ante-hall being embellished with ranges of coupled marble columns and a rich bronze balustrading, and intended originally to have had a fine ceiling painting by Mr. Charles Sims, though unfortunately this scheme has not materialised. On the walls of the staircase are two large niches, designed to receive sculpture. It was the vacancy of these niches that prompted the scheme under discussion. Sculpture in those positions would have an admirable effect, because the architects of the building, Messrs. Lanchester and Rickards, had carefully placed the niches in positions where the sculpture would be properly lighted by the adjacent windows. If only the promoters of the present scheme had restricted themselves to these niches, or to others that still remain empty elsewhere in the building, all would have been well; but the existence of pedestals between the staircase balustrading seems to have created the idea that these too might equally well receive sculpture; and this idea having taken definite shape, Lord Rhondda (then Mr. D. A. Thomas) was approached, and munificently undertook to defray the cost. A competition was held in

the Principality for a list of the ten chief figures in Welsh history, and to the selected ten was added later an eleventh name, Boadicea, the British queen. Professor J. Havard Thomas, acting with a committee, was appointed to direct the carrying out of the scheme, and certain sculptors were invited each to undertake a figure, the selected sculptors being in addition to Professor Havard Thomas himself, Sir W. Goscombe John, Mr. Ernest G. Gillick, Mr. Henry Pegram, Mr. F. W. Pomeroy, Mr. T. J. Claperton, Mr. L. S. Merrifield, Mr. W. W. Wagstaff,

Mr. Henry Poole, Mr. Alfred Turner, and Mr. T. Mewburn Crook.

It is only fair to state that the architects of the building were not consulted in regard to the scheme.

To Sir W. Goscombe John was allotted \*St. David, the patron saint of Wales, who, clothed in a pallium, is represented preaching to the multitude at the Synod of Brevi. It is a striking statue of "an eloquent man, full of grace, approved in religion, who has an angel as a friend, a lovable man, graceful in countenance, distinguished in form, upright in stature."

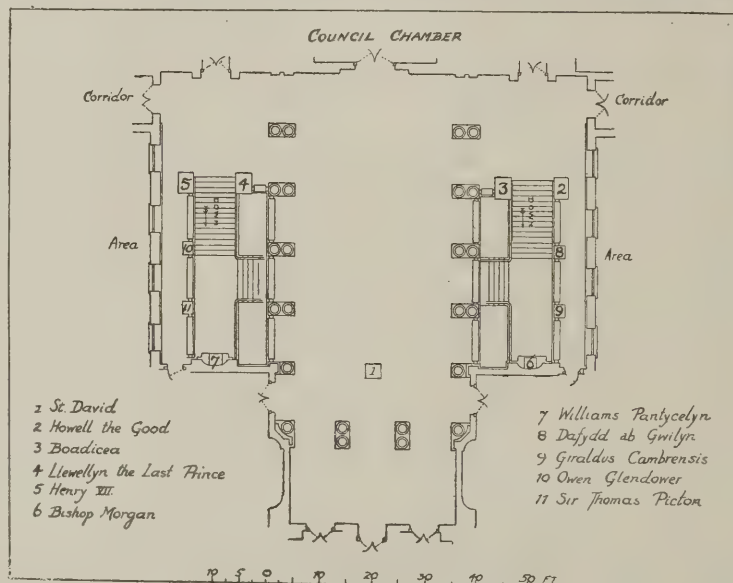
Professor Havard Thomas's sculpture is of Boadicea appealing to the Britons to avenge the wrongs done to her country. This is not shown in our plate, in which the subjects are restricted to those now on exhibition at the Academy, but it was illustrated by two large plates in the "Architectural Review" for October last.

Mr. Gillick presents Henry VII. as, now crowned, he stood up before his

soldiers after victory in battle, giving thanks and a blessing to their arms, his standard-bearers kneeling beside him. This is a soldierly figure, well composed, and full of dignity. It is not shown here, as it is not in the Academy.

Mr. Pegram's statue is of \*Llewellyn, the last independent Prince of Wales. He stands with arm upraised in defiance, a dead Welsh soldier on the ground at his right side and a crouching bard on his left.

The mild and benevolent \*King Howell the Good is Mr. Pomeroy's subject. We see the king in the act



THE STAIRCASE HALL, CARDIFF CITY HALL.



of ratifying the laws, codified by Blegwryd the scribe, who kneels at the king's feet.

Mr. Clapperton's sculpture is of \*Bishop Morgan, who, engrossed in translation, holds a Greek Bible in the left hand with a manuscript scroll across the open pages, while in his right hand is a quill pen, an inkhorn hanging by a cord from the neck. The book seems a rather ponderous burden to bear; but in the good bishop's day the miniature classics produced by Aldus could not have been very well known in Wales; but even if they had been, and the bishop had cherished one as his bosom companion, any sculptor would unhesitatingly object to it as out of scale and lacking in dignity. Nevertheless, it is doubtful whether such ponderous books were carried about on one arm, by even the most athletic of scholars. This, however, is an insignificant detail, and detracts not a jot from the high merit of the statue.

\*Williams Pantycelyn was allotted to Mr. Merrifield, who has fashioned the great hymn-writer in the costume of his period—the eighteenth century. His surcoat is caught by the wind, while his hands are momentarily arrested in recording his inspiration; a rowan-tree at his feet signifying, with legendary import, his mountain environment.

Mr. Wagstaff's statue is of Dafydd ab Gwilym, the romantic Welsh poet of the fourteenth century, who is portrayed carrying a harp and about to burst forth into song.

Mr. Poole's sculpture is of \*Giraldus Cambrensis, the great ecclesiastic who began life as an aristocratic Norman and ended as a Welsh patriot: a man of much learning, and possessing a striking personality.

Another Welsh patriot was Owen Glendower, whose qualities of soldier-statesmanship and spiritual aspiration shine out from Mr. Alfred Turner's statue. This is not in the Academy and is not shown in our plate, and the same note applies to Mr. Mewburn Crook's statue of General Sir Thomas Picton, who was Wellington's chief lieutenant in the Peninsular War and the Waterloo campaign.

The statues are of varying merit. Some of them bear too markedly the impress of the ordinary sculptor's studio manner, but Mr. Merrifield's "Williams Pantycelyn," Mr. Poole's "Giraldus Cambrensis," and Mr. Gillick's "Henry VII." display fine qualities of composition and modelling. Above all, however, stands the magnificent statue of "Boadicea," by Professor Havard Thomas. The history of sculpture, like that of architecture, shows us that departures from immediate precedent are invariably produced by an original reference to the masterpieces of the past. Most modern work suffers from the lack of any such original reference, and in consequence is characterless. But of sculpture that is moulded on tradition there is a difference between that which exhibits merely a clever application of the technicalities of past styles and that which, by masterly methods of transposition, reincarnates something of the elemental spirit with which all great sculpture is imbued. In Professor Havard Thomas's "Boadicea" this highest of achievements has certainly been attained. Whilst it would be impossible to classify it with works that are clearly a revival of a particular period or style, at the same time it breathes something of the spirit of Greek work, it reflects the charm of Donatello, the spiritual beauty of Blake, and the sincerity of Thorwaldsen. Its appeal is the result of inspired contemplation as well as inspired action. Unlike the primitive sculpture so much in vogue to-day, the simplicity of which is at first sight so striking, but which on more intimate acquaintance proves to be unsatisfying, the fine qualities of the Boadicea group are enhanced with closer attention, and a delightful first impression becomes clearer and

more satisfying with contemplation. One wonders to what extent this is due to an absolute perfection of finish seen in every detail, to masterly handling of technicalities, to a consistent display of energy in execution, or to the direct way in which the truth is expressed. It would be impossible to ascribe its success as a human achievement to any one of its fine technical qualities, but one feels that as a work of art it is cast in the same mould as those exclusive pieces which, by a subtle concentration of effort to the expression of some great human phase of character, are at once appreciated by everyone, and will ever survive. As a masterpiece of modern sculpture one feels that it is deserving of the most honourable place. The position assigned to it in the Cardiff City Hall is altogether unworthy of such a work: at the very least it should have been set in the best position in the staircase hall—that which has been assigned to the statue of St. David.

Brief biographical particulars of the subjects of the six statues shown in our plate are abstracted from the descriptive catalogue issued in connection with the exhibition at the Grafton Galleries, at which the statues were shown last year:—

ST. DAVID.—Dewi, or, as we now know him, St. David, was born in the year 544, and died in the year 601, son of a pagan father and a Christian mother. Come to manhood, Dewi went forth to begin his life for Christ. In Glyn Rhosyn he set up his cross and built his altar, and there is St. David's to-day. Hard work and steadfast prayer were the rule of his settlement. With axe and plough he and his followers cleared and broke the wilderness. With their own hands they built their church and cells. They tended their own flocks and herds, made their own clothes, prepared their own food, and did everything necessary to the carrying on of a populous settlement. Moreover, they kept learning alive by copying as many books as they could obtain, and especially they multiplied copies of the Scriptures for use in the land. The memory of Dewi never perished through all the horrors and the bloodshed of the savage centuries.

GIRALDUS CAMBRENSIS.—Gerald the Welshman was born, probably in 1147, at Manorbier Castle, in the county of Pembroke. He died, probably at Lincoln, about the year 1223. He was perhaps the first conscious Welsh Nationalist.

WILLIAMS PANTYCELYN.—William Williams, of Pantycelyn, though he died on January 11th, 1791, has still a dominant influence on Welsh life and character. In his hymns we hear the authentic tones of the religious revival which transformed and transfigured Wales in the eighteenth century, as we hear the sound of the sea in the shell.

BISHOP MORGAN.—Bishop Morgan's translation of the Bible into Welsh, published in 1588, was a great literary achievement. Morgan lifted Welsh prose to a height it had not known before.

HOWELL THE GOOD.—To King Howell the Good, born in the last quarter of the ninth century, was due the unification of Wales not merely under one family, or even one king, but under one law, valid for the whole of Wales.

LLEWELLYN THE LAST PRINCE.—Grandson of Llewellyn the Great, the influence of the grandfather brought only tragedy into the life of Llewellyn Olav until the fateful day in March, 1246, when the warrior clans of Gwynedd chose him and his brother Owen to be their champions against the threatened yoke of Henry III. Henry's army leaders were ready, however, and his forces marched the length of Wales, driving the two young Princes to retreat to the fastnesses of Snowdon, and in the end they were forced to do homage to Henry and to agree to the Convention of Woodstock, which left them nothing but Gwynedd, west of Conway.



## ARAB REED ARCHITECTURE AND THE ARCH OF CTESIPHON.

In an interesting communication to the "Architectural Association Journal," Mr. A. N. Peckham, A.R.I.B.A., describes the construction of Arab huts, and infers from them the derivation of the arch of Ctesiphon:

As we understood that we should have to spend the hot weather here (Mesopotamia), and no "European pattern" tents were obtainable, our C.O. was told to obtain reeds and reed mats locally and build huts of the Arab pattern. I had got an insight into the construction of the Arab hut just before, as we had been at work at road-making and I had had to pull down two or three. Their construction is as follows: Two rows of holes are dug, the rows some 10 to 12 ft. apart, and the holes spaced at about 5 ft. centres; in each hole a bundle of reeds is planted and the earth rammed home around them. The tops of the bundles are then drawn inwards till they overlap the tops of the bundles in the row opposite to them, when they are lashed together. The result is a series of arch-shaped reed principals of 10 to 12 ft. span and 5 ft. centres. On these principals are lashed purlins made of small bundles of reeds, and over this framework is fixed the "skin," consisting of either reed matting or of a row of reeds with their bases buried in the ground in the same way as the principals.

I have not had the opportunity since seeing these huts to study any photos or any drawings of it, but it seems to me that the great arch of Ctesiphon is clearly a copy in stone of the indigenous style of reed architecture. Further, the shape naturally taken by these reed arched principals is not a half-circle, but a semi-ellipse; and, if my memory of pictures serves me, that is the shape of the great arch of Ctesiphon.

The dimensions I have given are those of the ordinary huts in the Arab villages in the Tigris and Euphrates marshes, and are the average sizes obtainable with simple bundles of reeds. In some of the villages, however, I have seen some large halls of some 20 ft. span, with principals made up of several lengths of reeds, and our troops when building huts make them of 15 to 18 ft. span.

Knowing that I was an architect, the C.O. told me to get out schemes for housing the regiment in reed huts, and to give him an estimate of the number of reeds and mats I should require. It was a full year since I had done any architectural work, and I had, of course, no proper instruments with me, so I started first of all to improvise some. I had a pair of dividers, pencils and india-rubber, and had learnt along ago at the day school that an architect should always carry a two-foot rule; so I started fairly well. I cut a 45-degree set-square out of a piece of cardboard, got a scribbling pad of note-paper to serve as a drawing-board, and improvised a T-square by taking a biscuit-tin lid and turning over one edge to serve as a guide along the side of my pad of paper. Thus equipped I started to get out some sort of design. The C.O. told me that I could have "carte blanche," but, alas, I found him a very bad client! I roughed out an idea for a scheme (reminiscent perhaps of an A.A. design), with a large mess-house in the centre and wings on each side, containing officers' quarters (the other B.C.'s named it the "Crystal Palace"), and suggested that it

might be put in the centre of the water front of our camp, with a road from the main gate of the camp straight up to the mess-house. Unfortunately the C.O. would have none of my scheme, and with a sad disregard for the very rudiments of town-planning selected the site for the mess in an odd corner of the perimeter. Thus does Minerva have to yield to Mars! The "Crystal Palace" he also quashed, and all I could do was to get out some rough sort of quantities of reeds and mats. Worst of all, when I started to build he suddenly decided to have separate huts for each B.C., instead of one for every two, as was the original idea.

By the time our plague of locusts had exhausted itself we had got enough reeds and mats to start building; but as we had not yet succeeded in getting any string with which we could make up large bundles of reeds, I decided to get on with huts for officers and to begin by employing Arab labour. Our interpreter produced a party of about a dozen Arabs, one of whom seemed to be the chief builder and contractor of the place. I made a contract with him to erect huts at three rupees apiece, I providing reeds and mats. I also had to pay them for the thin reeds—which they called by some name which sounded to us like "birdie"—for binding up the bundles and lashing the purlins in place.

I soon found that even in Mesopotamia the building trade was not free from labour disputes, for after they had got the skeleton of two huts completed my Arabs proceeded to cover the first with matting, whereas I had intended to make the lower part of its walls in reeds, as I had seen done elsewhere in the country. This, however, was not in conformity with the local "building tradition," and when I told them to cover the second one with reeds they "downed tools" and went off without their pay. I got some Sepoys to work the next day and got two frameworks erected, but we were badly handicapped, having no supply of string and no "birdie," so we had to scour the camp for bits of string and of wire to do up our bundles. I also found that reeds were being sent in to me in such small quantities compared to mats that I must perforce cover in my huts with mats. So next day I took on my Arabs again.

In this way we built huts for all the British officers, of 10 ft. by 15 ft., and about 6 ft. to the crown of the arches. This height most of us increased by digging down one or two feet. I put two layers of matting on top, but in the heat of the day we had to wear topees inside our huts, though I may say they were more sunproof than the Arabs' camel-hair tents, inside which I have been able to see my shadow quite distinctly.

After finishing the B.C.'s huts and a small hospital hut I got huts for Indian officers, but before I had finished more than five of these I got orders to stop, as British troops were coming to spend the hot weather with us, who would have first call on our reeds and mats. I still had some material left, and having by now got some coir rope I made an attempt to erect a mess-house of 22 ft. span. I only succeeded in putting up four principals, which we called "the Great Arch of Ctesiphon," and then was stopped for lack of material, so that my mess-house remained, like Palladio's "Casa del Diavolo"—an unfinished fragment of a projected masterpiece. Later on we hung a punkah on "Ctesiphon"—and it was the only punkah in the camp—and dined

under its cool breeze. We did afterwards try to get some matting on it, but it proved unequal to the task of carrying roof and punkah together, so finally we had to dismantle it.

After other troops arrived at the place the hut-building was rather taken out of my hands. Each Indian regiment was given reeds and mats estimated as sufficient for five huts 60 ft. by 15 ft. The reeds we obtained were found to be poor in quality and liable to break when an attempt was made to bend them into a curve, and it was suggested that it would be better to make huts with straight sides and sloping roofs, with ratters made of small bundles of reeds, and ridge pieces and pole plates carried on posts made of bundles of reeds. I built two such huts, and was then struck with the idea that if I built several such huts side by side I would save a whole row of posts and a pole plate in every one I built. The result was a large shed, with roof-ridges 60 ft. by 90 ft. I suggested that it should be called the "Hypo-style Hall," but the Punjabi Mussulmans, who were very pleased with it, compared it in most flattering terms with the third-class waiting hall at "Lahore Station," and henceforward it was always known as "Lahore Station" in the mess. Shortly after it was finished the Id (the big festival at the end of the month of fasting) occurred, and "Lahore Station" was used for the big prayer meeting of all the Mussulmans of the brigade. I don't think there can be many members of the A.A. who have built a "Jama Masjid."

At the end of the hot weather the "Shumal" (a north wind that lasts for forty days) began to blow, and brought with it clouds of dust off the desert over our camp. Too late I reflected that the "Lahore Station" was unprovided with any cross-bracing to resist the wind. One extra windy day the row of posts on the windward side gave way; the extra strain thrown on the next row was too much for them, and in a few minutes the whole roof had collapsed absolutely flat, the whole building giving way together like the deacon's one-horse shay. I believe that some men were under it at the time, but luckily reeds and matting are quite light. So ended my hypostyle hall, but it had served its purpose, and by the time it collapsed the hot weather was pretty well over. Life was once more endurable inside a tent, and we began to speculate what the cold weather might hold in store for us.

### Sheffield Housing Problems.

The report of the Sheffield Federated Health Association, presented at the annual meeting, held at the Victoria Hall, Sheffield, recently, showed that useful work has been done, particularly in regard to the city's housing problem. A special committee has been appointed, and one of its duties will be to secure to the city a fair share of any grant that the Government may make towards the provision of houses. In order to be ready to take a forward movement when the time was opportune, the committee had met regularly, and had now much valuable information on the subject. It was hoped that the committee's efforts would have a valuable influence on the housing policy of the City Council. Among many other matters affecting the health of the city attention had been paid to the needs of munition workers. The Association had affiliated with the Women Workers Organising and Interests Committee in this branch of the work.





## WAR BUILDINGS SECTION

### SOME WAR-TIME USES OF GAS.

THE use of gas for power is invaluable in numbers of places engaged on war work; and the use of gas for lighting needs no emphasis; while toluol and benzol are indispensable to the manufacture of explosives. As these two important materials are by-products of gas manufacture, their output is proportionate to the output of gas; and wherever restricted railway facilities, or any other preventable hampering of the business of gas-apparatus manufacturers, delays or diminishes their delivery of gas-consuming apparatus to

the gas undertakings, this has the effect of keeping down gas consumption—already reduced by the war lighting restrictions—and therefore also keeps down the production of toluol and benzol.

The variety of war purposes which gas is at present serving could not be better summed up than in the following excerpt from an official communication issued by the Director of Factory Construction in the Ministry of Munitions to the manager of every munitions factory in the country, strongly urging that, in face of the pre-

sent need for an increased output of toluol and benzol, and of the shortage of labour, gas should be used as extensively as possible in all munition factories.

The purposes for which gas is being used in factories are enumerated as follows: As an illuminant: For all purposes. Incandescent burners should be employed in all cases. As a fuel (cooking): For the provision of hot meals for employees. Water-heating: For the provision of hot water for baths and lavatories and for washing purposes generally. Warming

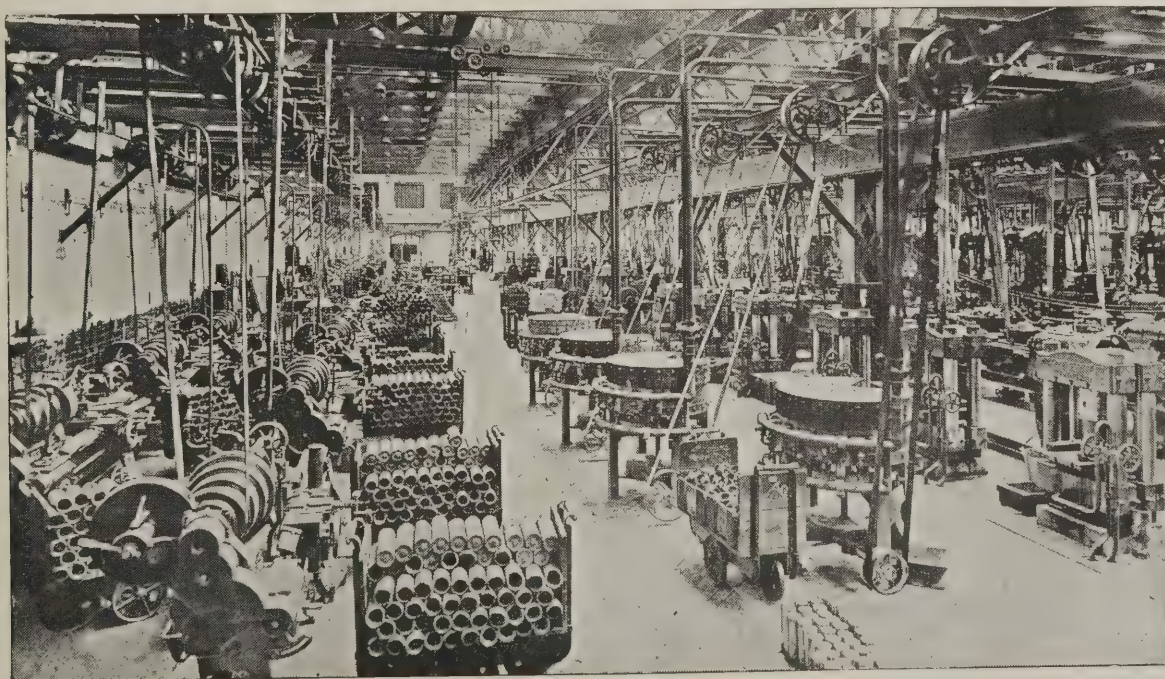


FIG. 1. MACHINE SHOP IN A MUNITION FACTORY.





FIG. 2. BATTERY OF HIGH-SPEED TOOL GAS FURNACES IN A MUNITION FACTORY.

purposes: For heating offices by gas-fires, and large rooms by means of gas-heated radiators. Manufacturing processes: For the following purposes: Annealing steel and bar for billets in charges of from 2 to 10 tons. Consumption about 3,000 cubic feet per ton of steel annealed. Annealing armour-piercing shells (15-inch). Nosing or heading steel-pressed shells. Heating copper bands for shrinking or pressing on to shells. Annealing brass for cartridge making. Welding bayonets. Forging, brazing, annealing, hardening, and tempering parts of small-arms. Thermo treatment of steel in connection with gear parts for motor transports and of parts for submarine engines. Tempering and hardening tools. Heating of acids or other liquids in vats. Cloth pressing and tenting. Raising steam in moderate quantities. Melting and casting all descriptions of metals. Generally, for all purposes involving the use of heat, either by direct application, or through furnace, oven, or internal heater. As a source of power: In all size units up to 1,000 b.h.p. engines and even larger sizes.

Among the chief virtues which have commended gas to managers of munition factories are doubtless the following: Saving of space, unequalled range of control, labour-saving effect, and elimination of waste—making for greatly increased efficiency. For example, in annealing processes, where coke or other crude fuels are used, a substantial proportion of scrap is unavoidable, whereas wherever a properly designed gas-furnace is employed waste of this kind is reduced to a negligible point.

A munition works is a hive of bustling activity, and not least in its furnace department. In one of the largest the ordinary accommodation of this department became over-taxed, and relief had to be found by making use of ample space in another part of the works, where the larger sizes of gas-furnace apparatus are now being fitted together, tested, and despatched.

Projectiles of all kinds and sizes, from the small cartridges for the service rifle right up to great 15-inch shells for naval guns, owe certain of the processes of their

manufacture, and often nearly all of them, to the use of gas apparatus made at the works. A walk round the works shows a great quantity of such apparatus in all stages of construction; and the total output of their gas-furnace department for war purposes is such as, we learn, would be found to be a most startling figure, were it permissible to make it known.

The modern shell, whether it be of the shrapnel or of the high-explosive variety, is a complex and delicate instrument, which must be made as carefully and timed as accurately as a chronometer. Wanting this accuracy, it may be too dangerous at the beginning of its journey and too safe at the end. It may kill friends; and it may fail to kill foes. A very little distortion, for instance, through the merest irregularity in one of the numerous heating processes in its manufacture, or a slight excess of hardness or softness in the encircling copper ring, due to a minute inexactitude in annealing, would affect the direction of the shell and might seriously damage the gun. A very slight flaw in some part of the fuse might mean that the shell would burst too soon, or that it would not burst at all. In respect of its contribution towards the avoidance of such irregularities, gas heating, with its steady uniformity of action and effect, is the obvious perfection of means adapted to ends; and shell-furnaces have been so contrived for conserving every advantage of this uniformity that it is small wonder no shell manufacturer who can get them—whether in Government factory or private works—will be content with other furnaces employing cruder fuels.

The uses of gas in this connection do not, however, end with the shell—indeed, it may be said that they do not begin with it either. Let the reader picture a vast and splendidly equipped shell-manufacturing establishment, such as the representative factory "Somewhere in Britain," which is shown in Fig. 1—rotary gas-shell furnaces will be seen prominent in the foreground—and let him ask himself what must happen with all the fine high-speed tools that are in use in such a factory, as, after regular wear and tear, they from time to

time require restoring to working condition.

In the hands of the toolmakers, who may be called the ambulance corps of the army munitioners, those vast numbers of tools which are rendered temporarily hors de combat are, by the use of high-speed-tool gas-furnaces, speedily restored to the ranks of the effectives once more. Indeed, some of the largest makers of munitions in the kingdom have standardised on these high-speed-tool furnaces—just as some gas undertakings do on their gas-stoves. These munition makers buy the furnaces in batches; and they highly value the reliable uniformity and other great conveniences resulting from their standardising on this one make of apparatus. (See Fig. 2.)

Coming to brass cartridge cases, the furnaces in which these are annealed are by no means small or light; and it illustrates the huge scale upon which everything in this war is conducted that these furnaces should actually be commonly referred to in dozens. One large munition firm, for example, has fitted up about three dozen of gas annealing furnaces, specially designed for annealing the cartridge cases for the army service rifle; and with the help of these they are turning out many millions of cartridges every week.

An interesting example of the superiority of gas is the heating of cartridge slips for rifle cartridges. In large munition works it has been found that 6 ft. by 4 ft. gas-furnaces take 33 1-3 per cent. more cartridge clips as compared with a coal-fired furnace of similar size. This is due to the uniformity of temperature which the gas-furnace maintains. In the coal-fired furnace, owing to what is termed "cold-mouth" of the furnace, the boxes of clips could not be placed within 18 in. of the door—a restriction which is entirely done away with in the gas-furnace. These gas-furnaces also reduce the time that the clips have to spend in the furnace by a further 33 1-3 per cent.; so that between these two savings the output is almost doubled. Another point scored by the gas-furnaces is that three of them occupy only the same space as one of the coal-





FIG. 3. GAS FURNACES THAT HAVE SUPERSEDED THE COAL-FIRED TYPE.

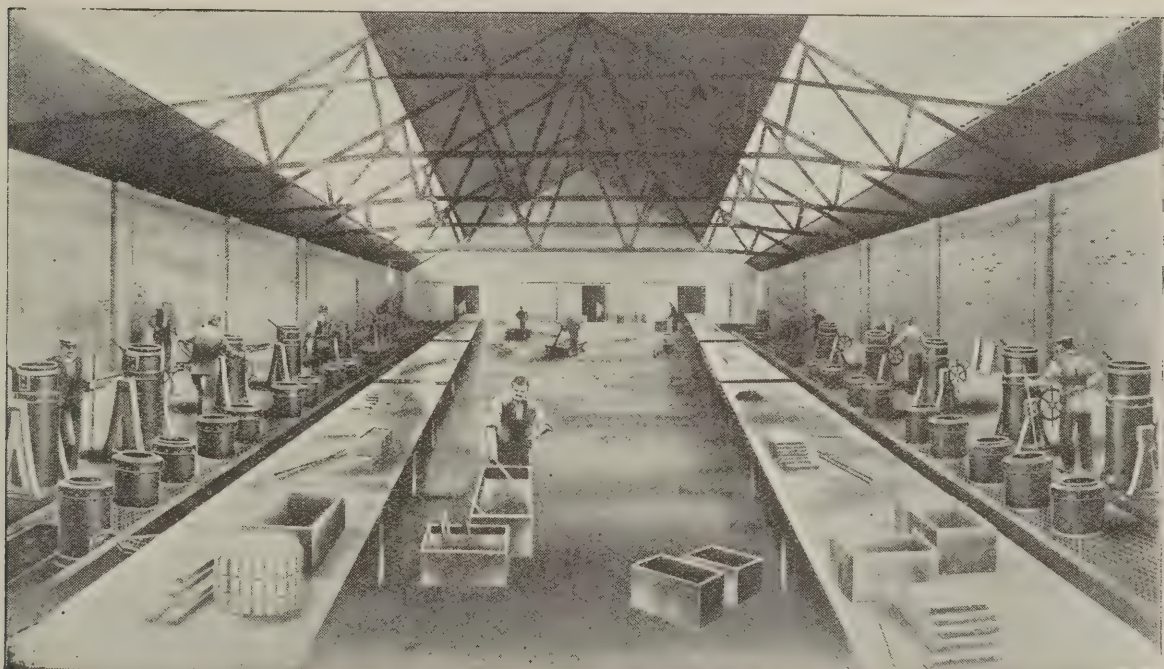


FIG. 4. BATTERY OF GAS CRUCIBLE FURNACES IN A MUNITION FACTORY.

fired variety, with its indispensable coal-storage space, which is not called for with gas. Hence these munition makers have actually multiplied their output on the same floor-space six times over by installing gas-furnaces.

Fig. 3 is a photograph showing, in position in the munition works, the gas-furnaces which have superseded the coal-furnaces in the manner described. These same furnaces are also used for the annealing of sheet brass for munition purposes

as well as for annealing cartridge clips.

Great importance is attached in the works to the various types of crucible furnaces in which the firm have specialised. These are of all sizes, and capable of smelting from the smallest quantities of metal up to a very heavy daily melt. (Fig. 4.)

The owners of the works early recognised the exceptionally great possibilities of industrial gas apparatus of the crucible-furnace type; and exceedingly large as

their business was in that class of apparatus, they believed that in the then existing types there were certain inherent limitations which must be got rid of before gas melting-furnaces could generally take the place of the coke-fired variety. Due experiment and research produced their present form of crucible furnace, which is now in so wide use, and with which metal can be melted so economically that the cost of the day's run does not exceed 2 to 3 ft. of gas per pound of metal melted.



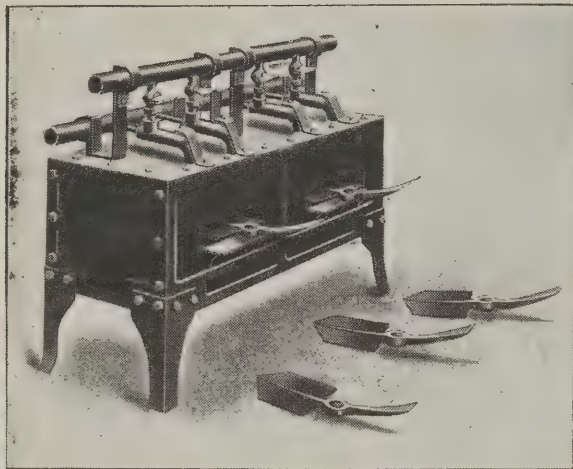


FIG. 5. FURNACE FOR TEMPERING ENTRENCHING TOOLS.

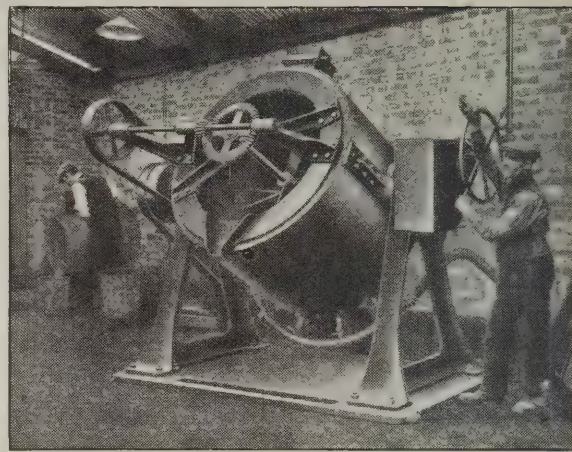


FIG. 6. GAS-HEATED TILTING MIXER FOR EXPLOSIVES.

It is also found that the life of both the crucible and the furnace is greater with this apparatus than with the coke-fired furnace, and that the loss of metal due to oxidation is considerably less than half that which is inseparable from coke firing.

Brass tube of various sizes is naturally in use for an equal variety of purposes in the manufacture of munitions; and for the annealing of these tubes a special gas-furnace has been designed, in order to give absolute uniformity of annealing the entire length of the tube.

Fig. 4 shows one of the applications of crucible furnaces to shell manufacture, in which fourteen crucible tilting furnaces and a battery of thirty fixed crucible furnaces are installed in one shop in a munition factory, melting white metal for shell fuses. The amount of metal melted by this installation of gas-furnaces in a day is over two tons.

Fig. 5 shows a gas-furnace which has been specially made for tempering the entrenching tools with which certain sections of our Army are now furnished.

War uses of gas-furnaces are by no means confined to the manipulation of metals. Furnaces of suitably modified construction have also gone to glass manufacturers for processes in connection with glass apparatus for war purposes. The large machine which is being handled by a workman in Fig. 6 is one of a number which have been supplied for use in chemical works, in connection with the manufacture of explosives for munitions. The apparatus consists of a very large gas-heated vessel (having agitator machinery inside) for the mixing of certain materials connected with these explosives. Work in operating this machine is minimised by its being so constructed as to tilt over to the side for emptying purposes.

For the great concourse of additional workers with which these vast, newly equipped munition factories are being manned, means have to be improvised for the supply of meals, as in many cases no such arrangements exist. Here again the variety of gas-cooking apparatus has been recognised as offering facilities of the most elastic kind for every varying scale of need; and for the supply of such requirements makers have been kept working at high pressure since a very early period of the war. Whether the material to be treated be mineral or vegetable, or whether, indeed, it be animal in the shape of food, gas is proving itself to be the most convenient medium for the purpose.

## MODERN SHOP ARCHITECTURE.

Under this heading, our new contemporary, the "National News," has an interesting article from which we make the following excerpts, without, of course, assuming responsibility for the opinions expressed:—

It has been customary throughout the later Victorian and Edwardian eras to be amusing at the expense of the Tottenham Court Road. The English are a loyal people, loving ancient saws, japes, and, by a natural consequence, sneers. But a good deal has been done in recent times to redeem the reputation of this ancient and respectable thoroughfare. In particular, it is being slowly rebuilt. At the southern end the top-heavy building of the Y.M.C.A. sounds a note of warning, and there is little comfort to the connoisseur to be had in this assertive monument to Y.M.C.A. industry and enterprise. Further north the Bosch Magneto building is a capable essay in the new architecture which has fitness for purpose as its main text.

Architects generally have awarded the blue riband of modern commercial architecture to the Kodak building in Kingsway, and the Bosch building owes something, no doubt, to the inspiration of that admirable structure. The main feature of this intelligent school is to build so that as much light may be preserved as possible, and so that the weight of the building may not seem, as in most shops, to be poised on plate-glass, while the surface enrichments are admirably handled.

The new furniture shop of Heal and Son runs the Kodak structure very close; indeed, in some respects perhaps it surpasses it—as in the gaiety and charm of its detail. But comparison is not very profitable, seeing that the functions of the two buildings are not identical.

The new Heal shop is designed for what it is—a shop. Obviously this building is frankly designed to display its wares; both outwardly and in the detail of its internal arrangements it is quite admirably fitted for this purpose. The structure shows to the street a handsome façade, of which the ground floor is faced with Hopton Wood stone, the upper floors with that Portland stone which weathers so wonderfully and bleaches to such a shimmering silver-grey in our acid London atmosphere. The weight of the building is borne, and obviously borne (which aesthetically is what matters), by four octagonal columns shod and capped with bronze. Above the first floor are symbolical panels showing

the tools and emblems of various crafts, cast in iron and painted in the gayest, simplest colours. Two hanging signs of a like gaiety and courage, are suspended at each end of the new shop. The windows, framed in walnut wood above a narrow base of black marble, are set back from the street, and form a pleasant, weather-sheltered colonnade, where intending customers may make their observations out of the spate of the pavement traffic. The lettering is all on the beautiful classic model so welcome in the work of the modern revivalists of this fine craft. The architects, whose names, according to a growing and seemly practice, are in process of being cut on the face of the building, have every reason to congratulate themselves on a singularly effective and appropriate piece of work.

## MATERIALS FOR DUBLIN REBUILDING.

Ald. Byrne, M.P., has received the following letter from the Irish Office:—

"The Chief Secretary has received your letter containing the 'Freeman's Journal' report of an interview with Sir Patrick Shortall, and some editorial observations with regard to alleged perverse action of the Government in relation to the supply of building materials in Dublin.

"Mr. Duke desires me to say that he long since took the steps which he promised in Dublin to take for the purpose of helping building owners to obtain supplies. After three weeks' interval he received from Dublin certain lists of steel requirements, and at once arranged with the Ministry of Munitions for their being dealt with. The Minister of Munitions also offered special means for dealing promptly with any building materials which are already in Dublin.

"Mr. Duke has been, and is, anxious to co-operate with the interests affected in securing every requisite for the rebuilding operations in Dublin, so far as Governmental action can do this, and he has dealt promptly with every representation made to him either personally or officially. He has not time to reply to unfounded criticism and invective."

A deputation appointed by the Reconstruction Committee, which left Dublin to press Mr. Duke and the Ministry of Munitions for facilities for the rebuilding of Dublin, included Mr. Henry Campbell, Town Clerk; Mr. McCarthy, City Architect; and Sir Patrick Shortall.



ARTS  
Arch.

# THE ARCHITECTS' AND BUILDERS' JOURNAL.

JUNE 6, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1170.

PRESUMABLY the conversion, or perversion, of the Victoria and Albert Museum into Education Offices is only a temporary expedient. It is nevertheless regrettable. Government has set a very bad example—or, rather, a series of bad examples—in the misuse of buildings; and where the Government leads, the municipalities will follow. To wrest a building from the purpose for which it was erected is to defy one of the fundamental principles of architecture, and, indirectly, to encourage designs that are insipid and soulless. An architect would lose much of his inspirational force if at every step he was daunted by the knowledge that his museum might be used as an education office, his college chapel as a chemical laboratory, his town mansion as a motor garage. Of the *en-tout-cas* building—nondescript and characterless, but “imposing,” to be let, when finished, as anything you please—we have already too many examples, and the encouragement of this idea was superfluous. Like the water-demon who, in one of R. L. Stevenson’s South Sea stories, exclaimed, “I grow bulky!” and sank the boat into which he had climbed in the semblance of a man of ordinary weight and stature, the education question has suddenly swollen to gigantic dimensions, and demands proportionate accommodation. That it should have taken lodgings in the Victoria and Albert Museum is particularly unfortunate, seeing that the public must consequently be denied access to the educational exhibits—those illustrating the applications of art to industry—which, at the present juncture, it is most essential to study.

It will be remembered that the museum contains, also, the fine collection of casts and models sent to it when the Architectural Association left its Tufton Street premises. What will be their fate? If they are relegated to the cellars, Palmerston’s historical misfit quotation may fit the occasion—“*Ars est celare artem.*” Though lodgers are sometimes difficult to dislodge—as instance the occupation by London University of the neighbouring Imperial Institute—these matters will doubtless right themselves in time, and ultimately the Education Ministry and London University will be duly provided with “purpose-made” buildings. This is surely an important and an interesting phase of the housing problem, and it is clearly the duty of the Government, and of the senate of London University, to be exemplary in this respect. They might even, in a manner, combine forces. It is not here suggested that the Ministry of Education and the University of London should occupy the same building, but it seems feasible that between them they might acquire some fine site on which to group a series of buildings devoted to education, with a Ministry of Education building for its central feature. South Kensington, of course, is already much occupied by buildings of a more or less educational character; but some of them seem to have simply “happened” where they stand; and the congeries cannot be recommended as a model of harmonious and convenient town-planning.

Speaking of architectural models, it would be interesting to know what has become of the architectural courts at the Crystal Palace. Prepared with scholarly care, under the supervision, if we remember rightly, of Mr. Digby Wyatt, they were a liberal educa-

tion in architectural history. It is to be feared, however, that they were not greatly esteemed by the general public, who preferred the swings and roundabouts. Nevertheless, the courts, though generally avoided by the crowd, were valuable to its more impressionable units, for whom the display offered their only opportunity of seeing in three dimensions, if to a somewhat exiguous scale, many of the most notable “works of man,” as Mr. March Philipps was fond of calling architectural achievements. Its fault was that it was too heterogeneous, and was therefore, to the casual visitor, more confusing than instructive. It would have been far more effectual if it had been less comprehensive—if, for example, it had been confined to the illustration of classical architecture. But, at any rate, it was well worth preserving, and we should be sorry to hear that it had been utterly destroyed. The set of handbooks—one for each court—were admirably done, and, between them, comprised a tolerably complete summary of the history of architectural development.

A memorandum on war memorials which has been issued by the Dean and Chapter of York has in it the possibility that its winged words may “find mark the archer little meant.” It is a sound proposition that “in so glorious a church nothing but the very best that contemporary art can produce should be allowed”; but a correspondent of the “Morning Post” is no doubt justified in expressing his fear that the example of York Minster will be taken as a signal crying a halt to parish churches. Obviously, it was never intended to have that effect. Very few parish churches are in the slightest danger of having their walls overcrowded with memorials; and, as we have said on previous occasions, there is no need to postpone the erection of modest individual memorials, many of which, if not put up at once, would probably not be erected at all. Postponement, moreover, would be, as the correspondent protests, a great calamity for artists, who, he says, “as a body, have been harder hit by the war than any other professional men.” Of course, no plea *ad misericordiam* is ever quite dignified; but the fact remains that it would be cruel to deprive artists of a perfectly legitimate opportunity of exercising their skill. We trust, therefore, that the fiat of York will not be misinterpreted to their detriment.

With a further contention of the “Morning Post” correspondent it is less easy to agree. He holds that, because art is long—a fact that a public debauched with hustling methods do not seem to understand—the larger and more general type of memorial should be commissioned now, if it is “to be ready to form part in our fêtes of victory when the time comes.” There is no real necessity for this coincidence; and to begin now would be not only to do an injustice to the many artists who are now with the colours, but to deprive the memorials of the freshness, vigour, and actuality that the soldier-artists could impart to them. To minor or private memorials, such as mural tablets, these objections hardly apply, and, as we have hinted, the longer the private memorials are delayed, the fewer there will be. By the way, we are rather sorry to see that our contemporary the “Guardian” is commending, as a substitute for mural memorials, “the touching and truly historical idea of a *Liber Vitæ* inscribed with the names of benefactors, and of those who have

fallen in the war." Truly historical it may be, but it strikes us as being feeble and ineffectual as compared with a mural tablet, visible to all, and appealing even to children. Such a book is being sent to America by the Goldsmiths' and Silversmiths' Company. As a variant on other forms, and as an addition to them, it is no doubt admissible; but we should regard it as a very poor substitute, and one that, we imagine, is not at all likely to be generally adopted. It makes too tame and bookish an appeal.

\* \* \* \*

Upon the announcement of an intention to build a theatre of varieties in Golden Square, the inhabitants have sent a formal protest to Westminster City Council. They are perhaps all the more jealous for the amenities of the square because, in accordance with a special Act of Parliament passed in the reign of George IV., the tenants are empowered to elect trustees to levy a small rate for the upkeep of the garden, for the painting and repair of its railings, and for the preservation of the insignificant statue of George II. which stands in the middle of the garden, and is said to have been brought from the seat of Lord Chandos at Canons, near Edgware. It would be rather an exceptional statue if it had not been ejected from some former site; and, regarding it quite candidly, one suspects in the Chandos family a vehement desire to send it away as far as possible from Canons. Golden Square, which lies just off Regent Street, was built in 1684, and possibly the houses which would have to be cleared away to make room for the theatre are of that date. Although the square is now mainly occupied by wool-merchants, it was at first a "residential" quarter, and the list of its distinguished inhabitants includes Lord Bolingbroke (when he was Secretary-at-War), Mrs. Cibber the vocalist, and Angelica Kauffmann, the first lady member of the Royal Academy. Possibly it was while she was living here that Reynolds painted her portrait, which Bartolozzi engraved. Childs, who had been valet to Lord Byron, was beadle of the square as late as 1875. The square is mentioned in Smollett's "Humphrey Clinker," James and Horace Smith's "Rejected Addresses," and Dickens's "Nicholas Nickleby."

\* \* \* \*

How did the square originate?—not Golden Square specifically, but the square generically? Has it not developed on somewhat similar lines to the dwelling, which is a weakening on its original character as a stronghold? Still to some extent an enclosure, it was at first an imitation of the courtyards of the lawyers' "inns," which were—and in some instances still are, after certain hours—shut off from the profane vulgar by stout gates; these "inns" being themselves an imitation of the university "quads," which derived from the monastic tradition of "a cloistered virtue." The habit of little communities shutting themselves in as a protection against marauding barons was modified to a means whereby the citizen could study in quietness by day and sleep in peace at night. In the not very remote days when towns were so badly policed that citizens could only travel in safety as armed gangs, it was almost necessary that wealthy merchants should shut themselves up in squares or courts, and set a watchman to patrol the ground; the aforementioned beadle of Golden Square being a belated survival of this sometime necessary precaution. Finally, the square blossomed into a pleasure, with trees and shrubs and flowers, and sometimes a grass-plot large enough for croquet, lawn tennis, or bowls. Well away from the roar and bustle of the thoroughfares, they usually lead nowhither, and hence are not greatly troubled with traffic. No wonder if their inhabitants became obsessed with the spirit of exclusiveness that has led to so strong a protest against the invasion of Golden Square.

## THE PLATES.

### *Reconstruction of Charing Cross Underground Railway Station.*

SINCE its electrification, the District and Metropolitan Railway system has undergone a wonderful transformation. Of the old Underground, with its peculiar suggestiveness of the infernal regions, there is now scarcely a trace—the gloom and grime have all disappeared. Some few of the stations remain more or less in their original condition, but others have been replanned and reconstructed throughout. A notable example is Charing Cross, rebuilt to the designs of Mr. H. W. Ford. In this issue we publish a photograph of the Embankment elevation of the station, and a working drawing showing elevations and sections of the general scheme of reconstruction.

### *Statuary for the Kelvinway Bridge, Glasgow.*

In our notice of the sculpture at this year's Academy we made the following comments upon Mr. Paul Montford's group for Kelvinway Bridge: "Certainly the sculptor must be allowed his stage properties; everything turns on the way he uses them, and the latitude allowed to such means will vary with subject, object, and locale. Hence one readily forgives, or even welcomes, the somewhat crude symbolism that is to appeal from a bridge to a heterogeneous public for whom the obvious must needs be made plain. We should hold, therefore, that Mr. Paul Montford's group destined for the Kelvinway Bridge, Glasgow, is amply justified of its eremite effigy of an aged and world-weary philosopher, ruminating half-sternly and half-sadly on the vanity of fame, as symbolised by the skull which has no further use for the wreath of bays. To this complexion must we all come, Horatio, with or without the bays, but grim insistency on this merely incidental fact does not set us violently in love with philosophy, which is so much more than a *memento mori*. Rather it should be a perpetual exhortation to high achievement and right living. A more modern conception of philosophy, even though it involved a less venerable and awe-inspiring figure, would have been more in accordance with the spirit of the age, which has a forward rather than a backward look. For this pessimism Mr. Montford atones in the companion figure of 'Inspiration,' which is physically as well as morally corrective of the gloomy mood created by the nevertheless noble and dignified 'Philosophy.' The sweet-faced, hopeful lady has roses to balance the bays, and her other properties—the lute, the comedy mask, and the palette and brushes—are, being familiar, very certain to excite 'the joy of recognition.' They are the elements of a cheerful atmosphere, though 'Philosophy' do his worst to depress us with a harrowing conviction that 'knowledge brings sorrow.' Anyhow, London may well envy to Glasgow an impressive, a dignified, and an essentially popular group."

### *Conjectural Restoration of the Ulpian Basilica, Rome.*

This illustration is reproduced from Cockerell's fine original perspective which hangs in the Architectural School of the Royal Academy. As will be seen, the columns of the ground and upper storeys have been omitted on the right and left hand side. The architect was Apollodorus of Damascus, who probably produced also the design of the Temple of Trajan.

### *Staircase from a House in Guildford.*

Reference to this staircase is made in the article which appears on pages 264 and 265 of this issue.



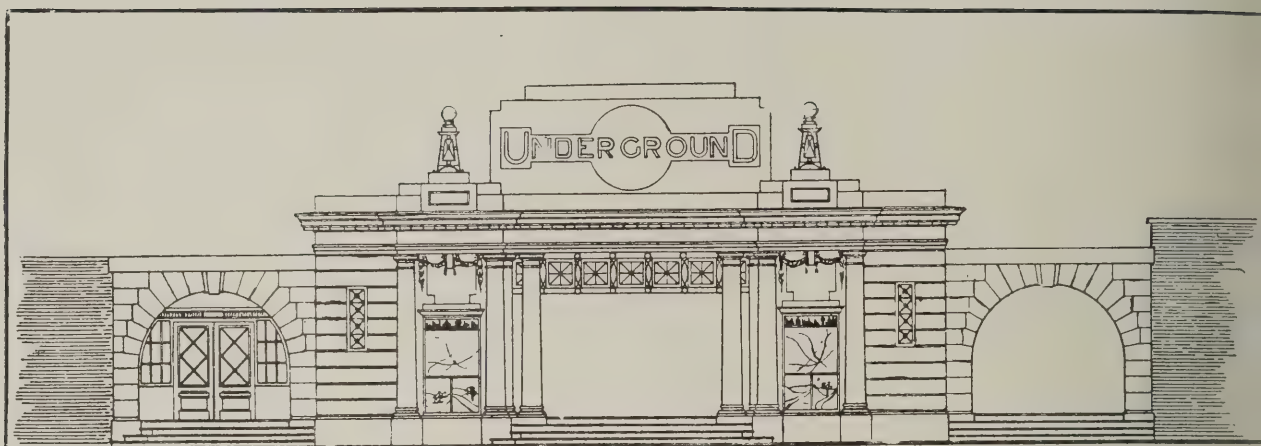


CURRENT ARCHITECTURE (SERIES IV.). XXIII.—RECONSTRUCTION OF CHARING CROSS STATION, UNDERGROUND RAILWAY, LONDON.  
H. W. FORD, ARCHITECT.

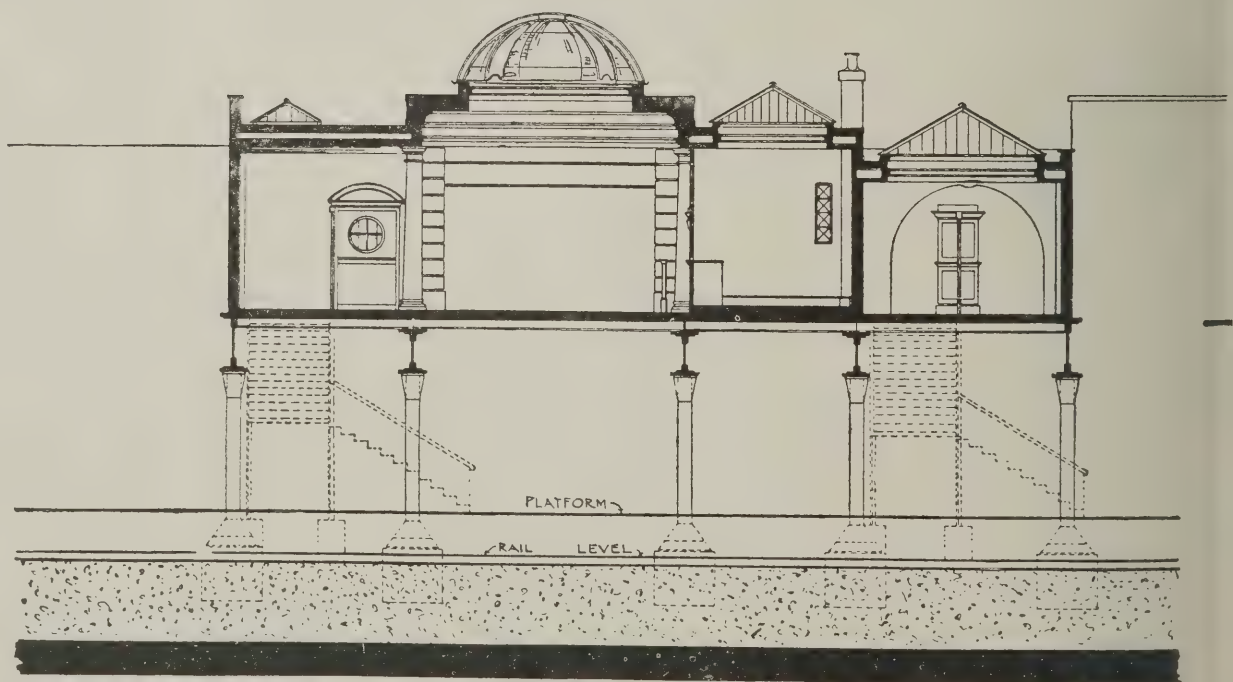






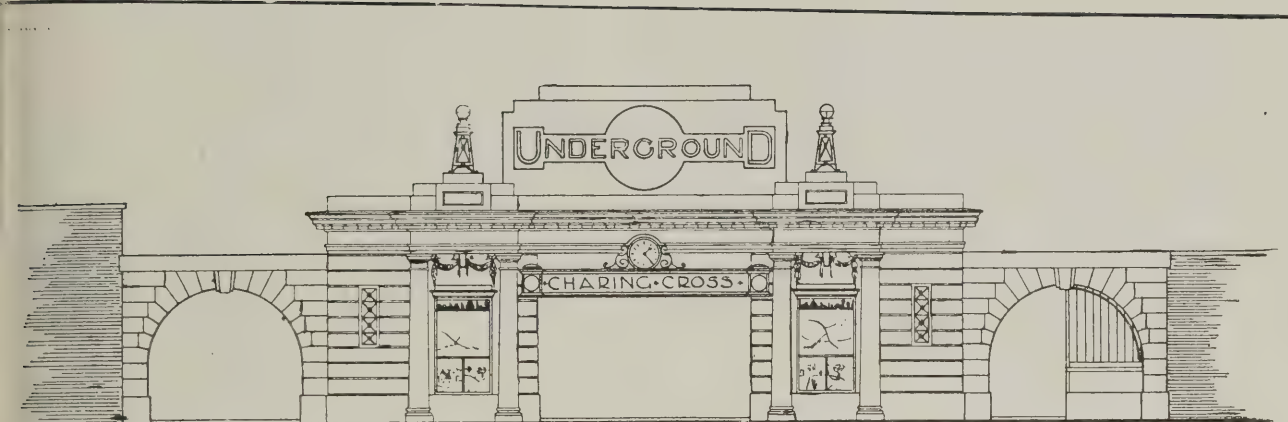


• ELEVATION TO VICTORIA EMBANKMENT •



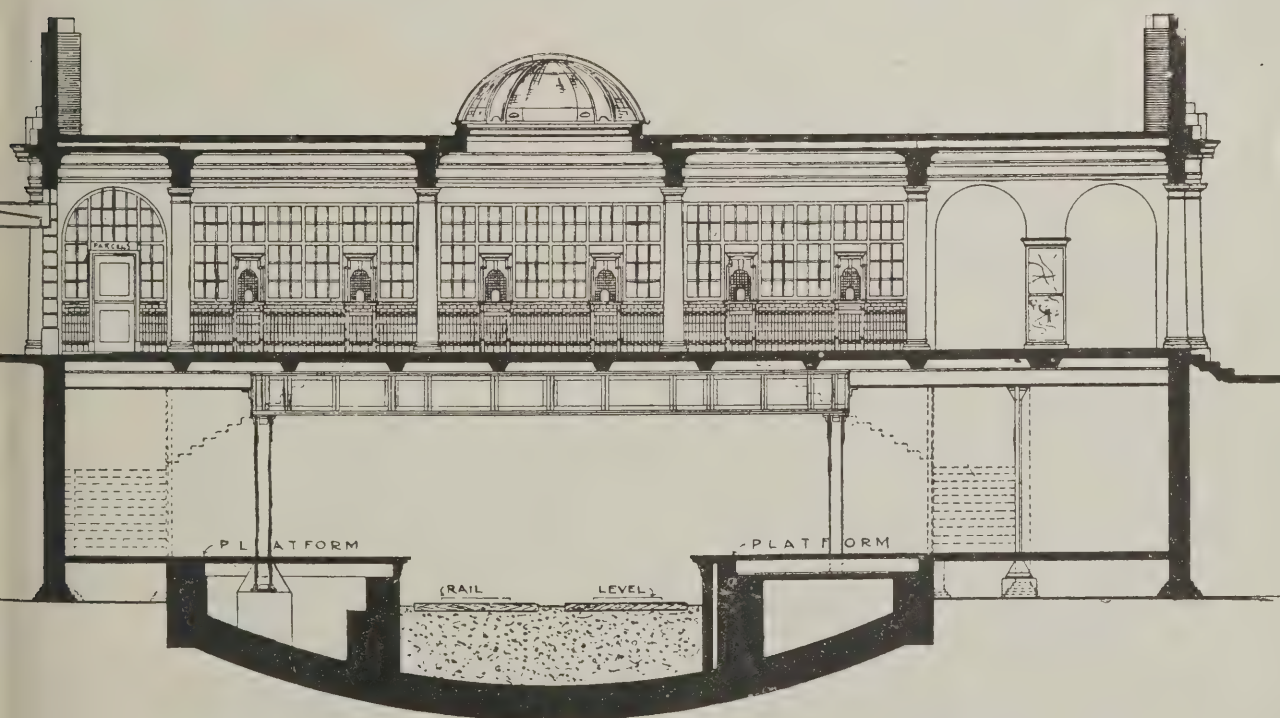
• LONGITUDINAL SECTION •





• ELEVATION To VILLIERS STREET •

FEET 30 40 50 60



CROSS SECTION

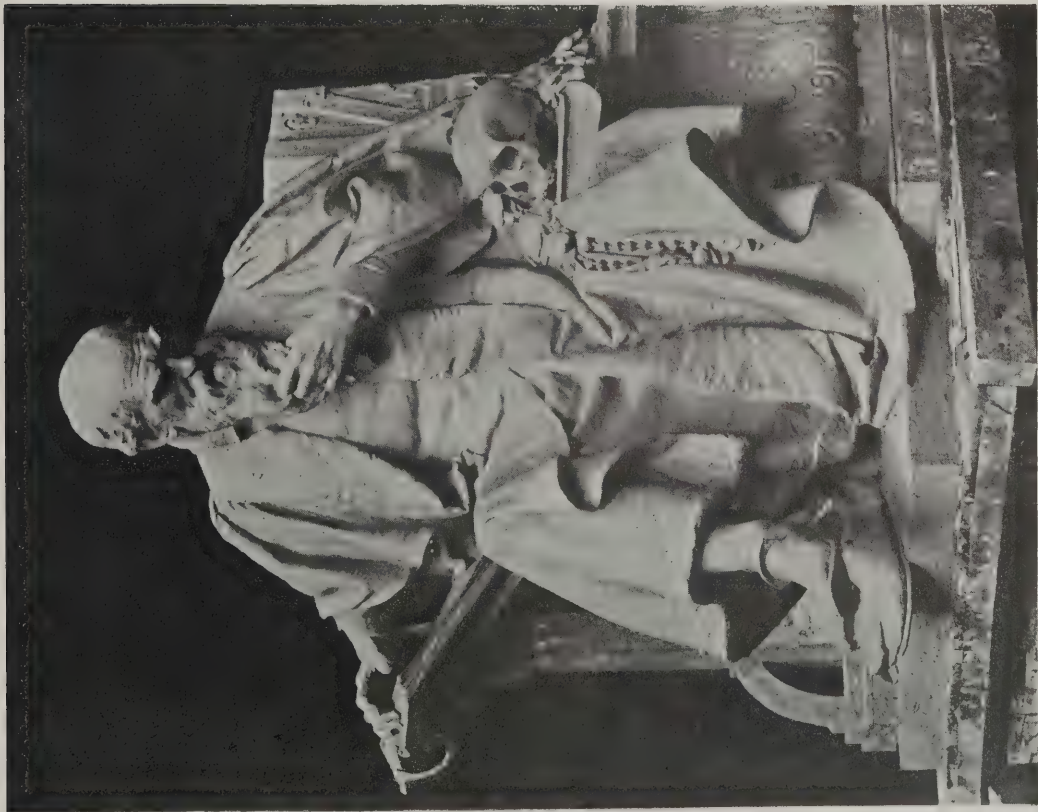
• H.W.FORD ARCHITECT •  
 • 11, OLD QUEEN STREET • •  
 • WESTMINSTER S.W. • • •

CHARING CROSS UNDERGROUND STATION FOR THE DISTRICT RAILWAY.

ARCHITECT.







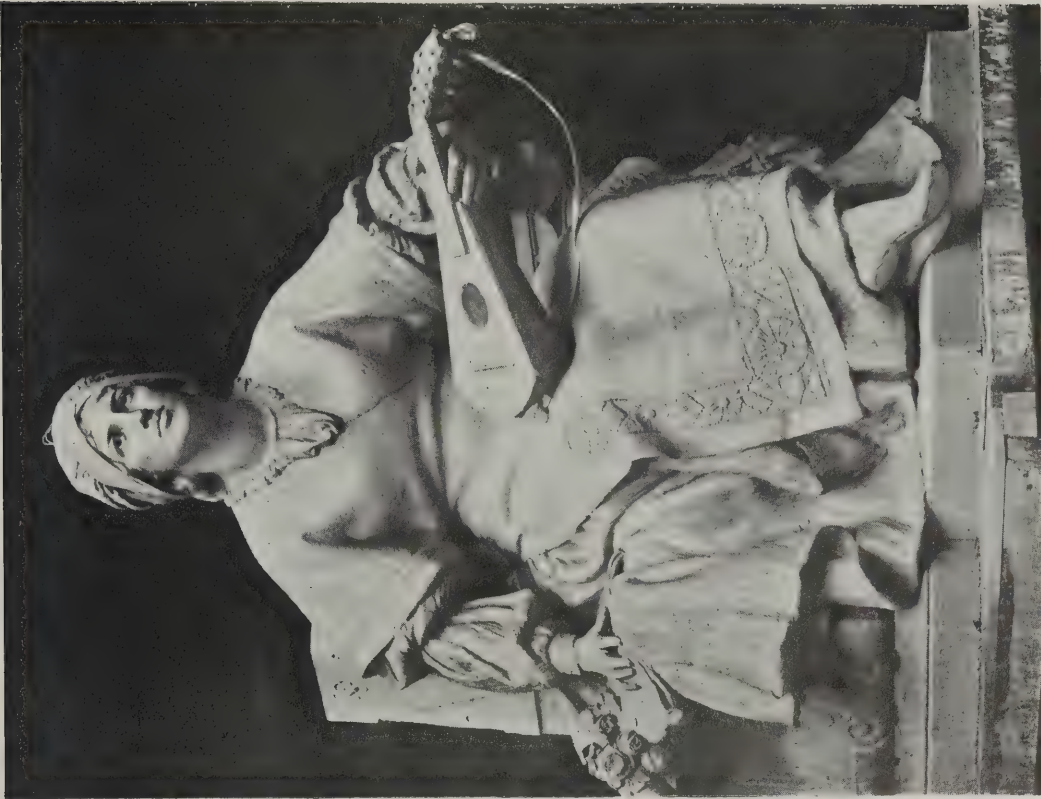
"Philosophy."

MODERN BRITISH SCULPTURE. II.—

FIGURES TO BE ERECTED ON THE KELVINWAY BRIDGE. GLASGOW.

PAUL R. MONTFORD, SCULPTOR.

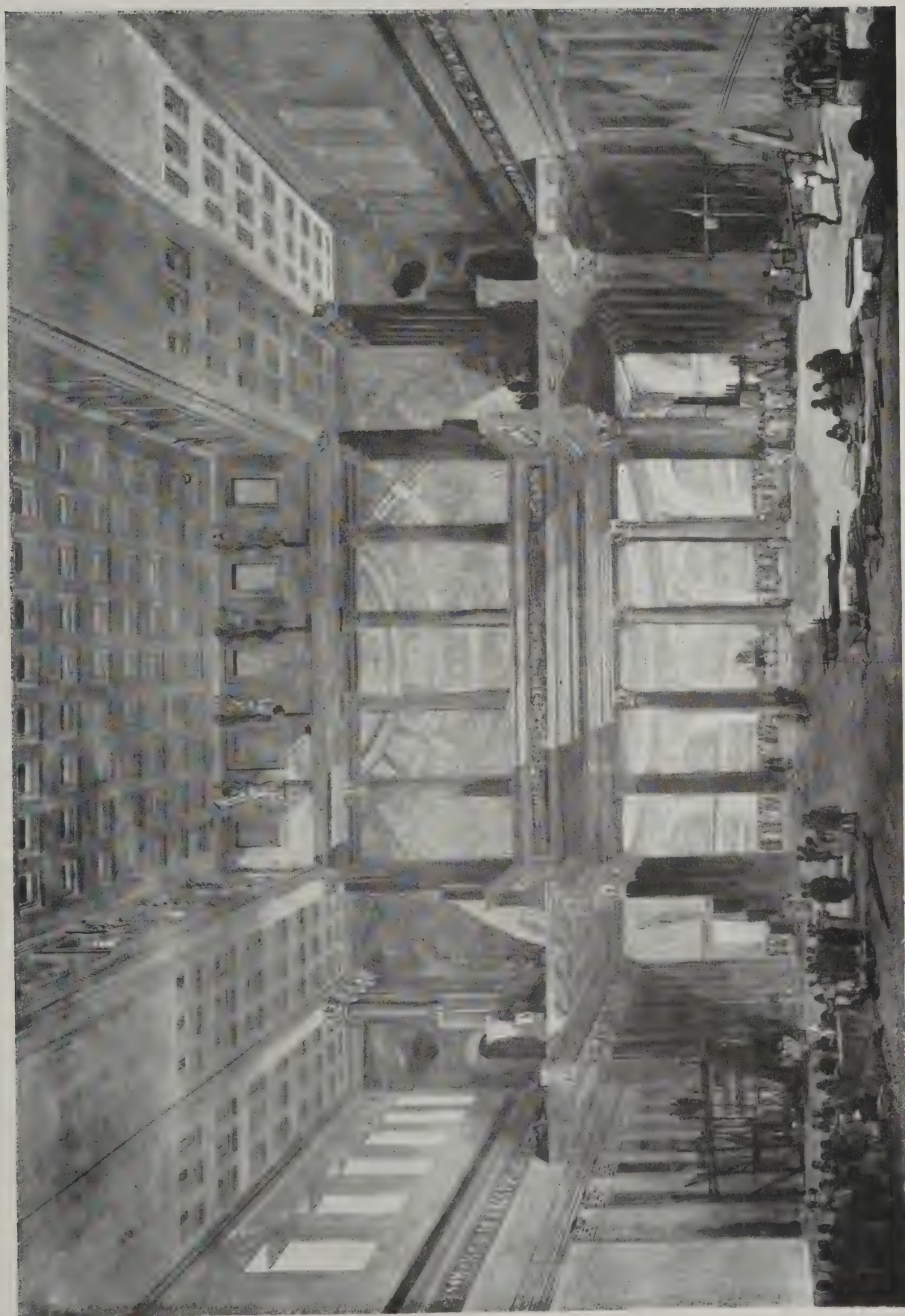
(*Royal Academy Exhibition, 1911.*)



"Inspiration."





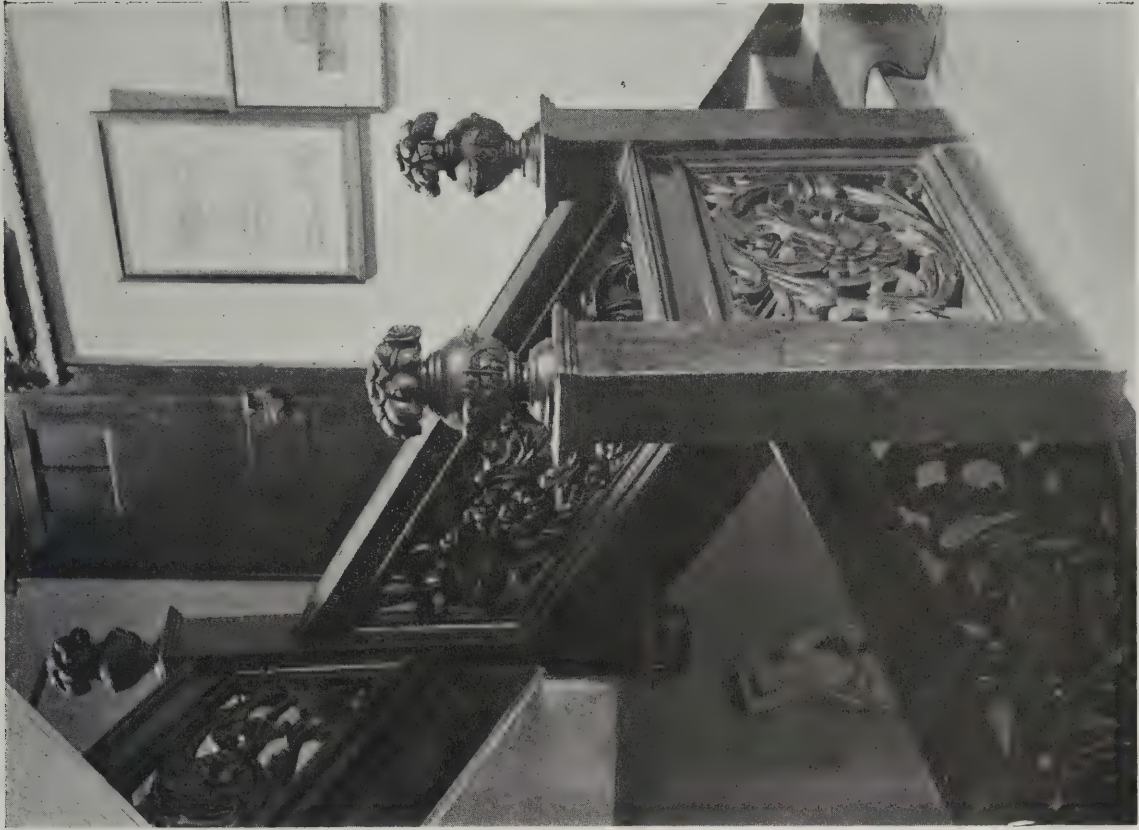


ARCHITECTURAL DRAWINGS AND SKETCHES. II.—INTERIOR OF THE ULPIAN BASILICA, ROME.

*From the drawing by C. R. Cockerell.*







XXIX.—THE STAIRCASE, No. 25, HIGH STREET, GUILDFORD.  
DETAILS OF CRAFTSMANSHIP (SERIES II.).





## HERE AND THERE.

WHAT about the new era in factory building? Has it really begun in this country? There is no doubt that it has—in a way. Within the past few years there have been put up, in these islands, factories that will stand comparison with the best work of this kind that is being done in America. With us, however, factories of first-rate character are few and exceptional. In America they are numerous and customary. With us also they are about to become numerous, unless British manufacturers, in their haste to build, blind themselves to the advantages of improved design, and insist on repeating *ad nauseam* the obsolete old models that have had such a deadly effect in defacing the country and demoralising the population. No one turns from these miracles of gloom and grime with such utter disgust as the architect, and that is one reason why these horrors are perpetuated.

There are several other reasons. Some of them seem to be part and parcel of the original sin of the factory system. Let us glance for a moment at the sudden onset of that system. It came in with the railways and with the general application of steam power to manufacturing processes. Purlblind moralists who blame education for the alleged decay of craftsmanship should blame the steam engine, which, however, is much less sensitive to censure than the delicate machinery of the educationists. That is the trouble; it is so difficult to persuade manufacturers that a new era has dawned, and that the earliest conception of factory polity was not necessarily the best. It was perhaps the best that could be conceived in the circumstances; but the circumstances have changed, and circumstances should alter carcasses, to say nothing of interiors.

With the sudden expansion of facilities for transport—with the advent of the railway and the steamship—there came a revolution of industrial life. Until then, production had been mainly parochial. A community met its own wants, and for supply or demand seldom looked beyond its own borders. Those were the palmy days of the "home handicrafts," of which the village blacksmith, with or without "a spreading chestnut tree," is almost the sole survival; and he has been collected into the trench or the munition factory, leaving his wife or sturdy daughter to keep the bellows roaring. Perhaps it was he who (according to "Punch") issued the Spooneristic command "Form roars—fight!" Anyhow, he has now belatedly suffered the absorption that, in the case of most other industries, was immediate and complete when not the parish but the world became the market-place.

In prints that are not yet yellow with age one sees all kinds of industries flourishing under ideal conditions—cutlers working beside a limpid willow-shaded stream in a daisy-spangled meadow; weavers, furriers, dyers, and the rest, all plying their primitive processes in the open, amidst the most picturesque surroundings, and all happy and healthy. Suddenly these people were all herded into factories, which were built anyhow and anywhere. To meet the requirements of the world-wide market, and to keep the voracious new machinery constantly fed, labour had to be organised, controlled, exploited. This was not good for its health; and the first fungus-growth of factories were prolific culture-beds of disease, dissipation, and discontent. Disease sprang instantly from the most atrociously unhygienic conditions (factories were often built on swampy land, which could be bought cheap);

dissipation followed as the natural corollary of depressed vitality and restricted liberty; and discontent arose not only from these conditions but from the perception that the workers' prospects were bounded by the four dismal walls of the reeking factory.

This last-mentioned condition is, I take it, the evil root of that "labour unrest" which employers find so inexplicable. But the cause is much more plainly evident than the remedy. Under the old happy-go-lucky conditions of industry, the worker had pleasant and healthy surroundings. He was not the slave of the timekeeper. Often he did not receive a fixed wage, subject to deductions for irregularities, but took that share of the profits to which his energy and skill entitled him; the head of the little co-partnership, which in many cases consisted of a father and his sons, or his brothers and nephews, doing his full share of the work. When he died or retired one of the band succeeded him, and naturally this was an incentive to qualify for the post. Then, a man's skill—whether in negotiation or in manual dexterity—was nearly all the capital he needed. He who possessed either qualification was always buoyed up by the possibility of becoming a leader; and, the industrial groups being very small, the opportunities of leadership were correspondingly large. Generally speaking, these opportunities were destroyed at once and for ever by the introduction of the factory system, although in some few trades, notably that of the builder, the old tradition still lingers sporadically. In the building trade, the "little master-man" is still a good deal in evidence, but he usually adopts factory principles of employment, exploiting labour, indeed, much more rigorously than the big builder, who finds it convenient to pay "the standard rate for the district."

Coming back to the factory, it only remains to observe that though about a score of Acts of Parliament combine to make it fairly healthy for the workers, legislation cannot make it comely and pleasant for them and for the passer-by. This is purely a matter for moral suasion; to be applied by the architect in his blandest and most soothing manner. For I assume that the architect, now that he sees that factories really afford scope for architectural treatment, will not, as he is reported to have done, even in America, pharisaically stand aloof from such work, but that was before factory owners began to vie with each other in presenting pleasant exteriors, and, of late years, several English architects have built factories of quite unexceptionable design. Agreeable façades should, in future, be the rule rather than the exception; for the business man in Britain, like his cousin in America, is evidently awakening to the glorious fact that "it pays to look pleasant." That is the argument to drive home, and its success should atone for its sordidness, which is more superficial than essential.

As the factory is, so are the workers, who, like the rest of "animated nature," are subject to the law of adaptation to environment. If their factory wears the frown of a prison-house, they will work with the sullen grudgingness of a man undergoing penal servitude. If the building greets them with a smile, their own countenances will reflect this cheerfulness, and their whole demeanour will correspond. Cheerful surroundings are an invigorating tonic, and, contrariwise, vitality is subdued and energy depressed by squalor and untidiness. Get factory owners to understand this, and they will build accordingly.

DIOGENES.



## A SEVENTEENTH-CENTURY SHOP AT GUILDFORD.

**B**UILT in the latter half of the seventeenth century—Messrs. Clemence and Moon, of Guildford, informed Mr. J. Alfred Gotch that the date 1665 is scratched on a window of the ground-floor—the house of which illustrations are shown here and on one of the supplementary plates of the present issue is an interesting example of what may be effected by skill and conscientious care in the treatment of a fairly simple problem. The frontage to the High Street, Guildford, is about 22 ft.; but the site widens out to the back to a little more than 40 ft.; the depth extending to rather more than 300 ft. Of this distance the house and its adjuncts occupy about 130 ft. Then comes a rectangular garden of about the same length, and at the further end are the stables. A straight vista contrived down the middle ends in a small garden-house, which masks the stable yard. While the whole arrangement is extremely simple, it has a certain air of distinction, and the unobtrusive evidence of thought which it displays lifts it clear of commonplace.

Quiet handling marks also the treatment of the street front. The ground-floor is occupied by the shop, which has a central doorway recessed between the two flanking windows, which are divided into large panes—not visible in the illustration, because of the shutters. Carved panels decorate the stallboard, and bold carving is seen also over and around the doorway. "Happy were the times," Mr. Gotch remarks, "when the shopkeeper's demands did not exclude these interesting touches! In the present day every inch of frontage must give facilities for the display of goods: even the space requisite for the support of the wall above, although attenuated beyond the limits of apparent safety, is grudged. There is no width left at the side of the door for carving, nor any height for it between the pavement and the window. All, all must be glass!"

When this house—No. 25, High Street, Guildford—was built, the tradesman's demands were not so exorbitant, and the architect was able to impart a certain degree of dignity to a substructure substantial enough to satisfy the eye that it was equal to the task of carrying the house above it. The house-front is projected beyond the shop, and is divided by pilasters into three bays, each of which contains a large window on the two floors. Enough wall-space is left to produce a broad effect, and the whole is crowned with a widely projecting cornice. By carrying a moulding across the strips not occupied by the upper windows the effect of a deep frieze is obtained, and by stopping the pilasters below the moulding their height is made proportionable to their width. The middle window of the upper storey is slightly projected, and the cornice breaks forward round it; it is also brought forward above the side pilasters, thus enhancing the variety and interest of the whole composition by very simple

means. On the first floor the middle window is furnished with a plain iron balcony, slightly enriched with a central panel, and with a kind of basket for holding a vase or flower-pot over the two corner standards. The whole front is an excellent example of simple ingenuity and judicious restraint. (See illustration.) Inside the house there is rather more richness of



No. 25, HIGH STREET, GUILDFORD.

treatment, particularly in the staircase and the ceiling of one of the rooms. The staircase is of a type not widely adopted in England, although there are several examples of its kind. The newels are stout and plain, and the handrail and strings are correspondingly





DETAIL OF CEILING TO PRINCIPAL ROOM ON FIRST FLOOR.

massive. But the particular feature which is most noteworthy is the boldly carved balustrade. This type is so unlike anything which the traditions of England could supply that the conjecture is probably correct that we owe it to Dutch sources: and in support of this theory may be cited an example quite as fine, if not finer, in that small but interesting house the Brewers' Hall at Antwerp. Provided the theory is correct, it is curious to suppose that while English and Dutch politicians were fighting, the workmen of the two nations should have been fraternising. (They are fraternising, with a considerable difference, to-day, at Petrograd and Stockholm.) In harmony with the balustrade are the boldly carved vases which serve as finials to the newels.

The ceiling already mentioned is in keeping with the date of the house, and follows the fashion of the time. In treatment it is far bolder and more massive than had been customary in the early half of the century. Deep, broad, and straight ribs form a square within which is a circular design. The modelling is in high relief, although not so high as in some contemporary examples where much of the plasterwork was so detached as to require a coil of wire: they march, indeed, in this respect with the wood carving associated with the name of Grinling Gibbons. Here, however, the ceiling just avoids this exuberance.

The garden front is quite plain except for a rather quaint bay window with rounded angles. The doorway, which closely adjoins it, is probably original, but it is a pity that the flight of steps which leads from it to the garden has lost its balustrades, for which heavy brick side-walls have been substituted.

The lead glazing, though perfectly plain, imparts scale to the building, and a lively play of light and shade results from the impossibility of maintaining the small quarries accurately in the same plane. The opening casements are generous in size, and are secured by fasteners which are charming specimens of ironwork.

## CORRESPONDENCE.

### *Industrial Reorganisation.*

To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIRS,—I have seen in a recent issue of your Journal [April 4, p. 167] the outline of a scheme for the betterment of the relations between employed and employers, with which I entirely agree. In fact, I have been working on these lines for some months past now, and we have had many conferences in different trades between Trade Union leaders and manufacturers.

It is absolutely essential, however, if conditions are to be improved between capital and labour, that a law should be passed making it compulsory for every man in our staple trades to join his union and every master his association. One recognises that this is perhaps rather a drastic step to take at once, but my suggestion is that where a trade has 75 per cent. of its men in the union and 75 per cent. of the masters in their association, that on joint application being made to them by masters and men the Government should have the power to grant that industry a charter, which would make it compulsory for every master and man in that industry to join his respective association. This is a practicable and reasonable step, which could be taken at once. The Government would simply offer facilities to a trade if the great majority of the trade like to avail themselves of it. If they do not avail themselves of it—well, no harm would be done; if, on the other hand, they do avail themselves of it, a very useful social experiment would be made in large industries, which would go far to helping us to the final solution of the difficulties surrounding capital and labour.

I enclose you a pamphlet which contains letters and articles on the subject.

Bristol.

MANAGING DIRECTOR.

[We propose to discuss this in a future issue.—EDS.]



## NEWS ITEMS.

### *Building Workers' Wages.*

The Northern Conciliation Board has awarded an increase of a penny an hour to the workers in the Manchester building trade. Some 5,000 men are affected. An increase of a penny an hour has been awarded to the London operatives by the arbitrator, Sir George Askwith.

### *For Our Friends in Front.*

There are undoubtedly many engineers, architects, and builders who have friends in France, Spain, Holland, Russia, Poland, Portugal, and Japan. Literature upon "Waterproofed Cement" has been translated into these seven languages, and we are asked to state that it will be sent free on request to anyone who will write to Messrs. Kerner-Greenwood and Co., of King's Lynn, the proprietors of the cement waterproofer "Pudlo."

### *Plumbers are Scarce.*

Scarborough Corporation has decided to support the local Master Plumbers' Association in an effort to retain in the town, in the interests of sanitary efficiency, the local plumbers who have volunteered for National Service. It appears that nearly all the plumbers over military age have volunteered under the scheme, and that they are now being called up. Thus, as the ranks of the local plumbers have already been sorely depleted by the enlistment of the younger men, the situation if others are taken is considered to be serious.

### *A Compact Treatise on the Slide Rule.*

Under the title of "The Slide Rule: Its Operations and Digit Rules," Mr. A. Lovat Higgins, A.M.Inst.C.E., of the Engineering School, Queen's University, Belfast, has published, through Messrs. Whittaker and Co., 2, White Hart Street, Paternoster Square, London, E.C., an inexpensive but thorough little treatise on an ingeniously devised instrument which is adaptable to many purposes of measurement and computation. Its uses are very clearly and concisely explained in a booklet containing hardly more than a dozen pages, into which, however, a large amount of useful information is compressed.

### *London Street Widening.*

Westminster County Council is being asked to contribute one-sixth of the net cost (£87,500) of the widening of the Strand at Nos. 125 to 130 (inclusive); 1 to 15 inclusive, Wellington Street; and 10, Lancaster Place, including the acquisition of the leasehold interest of Messrs. Willing in No. 125, Strand, and the cost of the reconstruction of the public conveniences in Wellington Street, with subway approaches. If advantage is not taken of this favourable opportunity for widening Wellington Street on the west side (the Council is informed), the widening necessary in the event of Waterloo Bridge being widened could be effected only at prohibitive cost.

### *Building Trades Advisory Committee.*

The Building Trades Central Advisory Committee (Operatives), which advises and assists the Ministry of Labour upon matters affecting workmen in connection with employment exchanges, has held its third meeting, Mr. C. F. Rey presiding. The Committee considered: (a) the best means of avoiding delay in the placing of men sent by employment exchanges

from one town or district to another; and (b) the desirability when appointing employment exchange officials whose duty it will be to deal with applicants for employment of giving due consideration to their qualifications, both as regards knowledge of industrial conditions and ability to deal sympathetically with workmen. It was reported to the Committee that the Ministry of Munitions had decided to extend the list of occupations for which men are eligible for enrolment as war munition volunteers, so as to include bricklayers and general labourers suitable for munitions or shipyard work.

It has been decided to call a special meeting of Kingswinford Town Council with the object of forming a town-planning committee.

A motion by the Mayor of Aberavon applying to the Local Government Board for authority to prepare a housing scheme has been adopted, and a resolution carried calling for a Local Government Board for Wales.

We are asked to state that all the work illustrated in the article on "Reinforced Concrete as a War-Time Building Material," published in our issue for May 16, was carried out by Messrs. D. G. Somerville and Co., Ltd.

## IRISH BUILDING MATERIALS.

The permanent exhibition of Irish building materials now in process of arrangement in the Industrial Annexe, National Museum, Dublin, though still incomplete, should be of particular interest to architects, builders, stone-cutters, and owners of property in the destroyed area of the city. So far, only stone, slates, bricks and tiles, terra cotta work, and roofing materials are on view, but even within this limited scope the display is noteworthy. The exhibits of dressed stone are exceptionally attractive. Cubes of uniform size, representative of quarries in all parts of the country, they are designed to show the various treatments possible with the material at the craftsman's disposal. Roofing slates are well represented. Bricks and tiles and terra-cotta work make a very creditable display, and patent roofing materials from north and south are also included. Exhibits of fibrous plaster work are being arranged, and as soon as the specimens can be assembled will come castings, metal work, wood work, paints, varnishes, terrazzo flooring, stained glass, decorative enamels, shop fittings, etc. The exhibition will include every article used in the construction and decoration of buildings which is at present made in Ireland, and, as time goes on, it will include the many new manufactures which it is expected will spring into being.

At the weekly meeting of the Council of the Dublin Industrial Development Association, the Secretary reported that the Joint Committee of Native Building Materials appointed by this Association and the Royal Institute of the Architects of Ireland had decided that certain information bearing on their work of compiling a complete directory of producers and manufacturers of Irish building materials could only be obtained by circularising rather extensively. The Association decided, in view of the importance of the matter from an industrial standpoint, to bear the necessary expense.

## BIRMINGHAM TOWN PLANNING.

The Local Government Board has held a local inquiry in Birmingham into the application of the Town Council for the approval of a scheme for the amendment of the East Birmingham scheme which was made in August, 1913. This is the first town-planning amendment scheme which has been prepared under the provisions of the Act of 1909. The amendments proposed were, however, only small ones, and were limited to alterations in the line of certain roads, there being no variation of the original scheme as regards building lines, densities, etc.

The Town Clerk (Mr. J. Beaumont Jones) presented the case on behalf of the Corporation, pointing out that the necessity for the variation had arisen consequent upon the extension of the city boundary, which took effect in November, 1911, prior to which date the original scheme had been made by the Corporation and submitted to the Board. When the Corporation, immediately after such extension, proceeded with the preparation of a town-planning scheme for an area previously outside the boundary, but which adjoined the area of the East Birmingham scheme, the necessity for a variation in the line of roads became at once apparent, hence the present application.

The only objection which was made to the amendment scheme was one on behalf of an owner whose land was outside the area but adjoined a portion of it. At the inquiry, however, other persons were present on behalf of other owners, most of whom, however, possessed land outside the area. In fact, the objections raised were really against the provisions of the original scheme, and not against the variations as provided by the amendment scheme, and consequently the Town Clerk pointed out to the inspector that the objections were clearly outside the scope of the inquiry.

## OBITUARY.

### *Mr. Walter Lewis Spiers, F.S.A.*

Mr. Walter Lewis Spiers, who died on May 28, at 13, Lincoln's Inn Fields, aged sixty-eight, was a younger brother of the late Mr. R. Phenè Spiers, and had been curator of the Soane Museum since 1904. Further biographical particulars are held over.

### *Sir A. R. Binnie.*

Sir Alexander Richardson Binnie, engineer of the Blackwall Tunnel, and for many years chief engineer to the L.C.C., has died at Beer, Devon, at the age of seventy-eight. For fifteen years he was water engineer at Bradford, where he constructed reservoirs costing £1,000,000. In 1890 he became chief engineer to the London County Council. The water supply of London occupied him continuously. He carried through the necessary work for the widening of the Strand and the laying out of Aldwych and Kingsway. The tunnel under the Thames at Blackwall is a memorial of his skill. The difficulties which the great engineer had to contend with may be gauged from a remark of the contractor, Sir Weetman Pearson (now Lord Cowdray). Speaking at the dinner given in 1897 to celebrate the opening, Sir Weetman said that before he undertook the contract the engineer of a great tunnel came to him and said, "Don't try the impossible." Both men persevered, however, and won a great triumph.





## WAR BUILDINGS SECTION

### HOUSING THE MUNITION WORKERS.

AN official statement has been issued by the Ministry of Munitions on the important work which is being done in regard to the housing of munition workers. Prominence is given to the work done by public utility societies, and it is a cause of congratulation (says a writer in "Garden Cities and Town Planning") to all those who have supported the garden city movement to know that during the past twelve months the association has several times been called in to advise those responsible for this important work, and that prompt advantage has been taken of the offer made by the association when the proposal of small holdings colonies was first put forward. Practically the whole of the housing work has been done in consultation with, and under the supervision of, men who have made their mark in the garden city movement. The following is the text of the note:

"One of the most urgent problems which the Ministry of Munitions has to solve is the housing of the munition worker. The opening of a new factory, or the conversion of existing works to the needs of the State, often involves the transference of large numbers of workers to localities which at most can meet the requirements of a normal population, and even to localities where there is an actual shortage of houses. The immediate remedy is found in the provision of temporary accommodation; but in other cases permanent buildings are erected, the latter method being followed especially where house famine is known to have existed in pre-war days, and where there are good prospects of permanent manufacturing activity. The methods adopted by the State for the provision of permanent accommodation vary according to local circumstances. In certain cases loans are made to public utility societies which undertake the housing of munition workers, such loans being conditioned

after the manner familiarised to the public by garden suburb and other associations. In other circumstances loans have been made directly to certain individual firms. These loans have been issued at the current rate of interest—usually 5 per cent.—and run, generally speaking, for a period of forty years. Certain private firms—now controlled establishments—have, moreover, been permitted to charge some portion of the increase on the cost of building due to war conditions to that part of the firms' profits which would otherwise have gone to the Exchequer. Such an arrangement is, however, only made in exceptional cases. A contribution of a part of the capital cost of building is in other instances made by the State to certain local authorities. In all cases his contribution is less than the estimated increase due to war conditions.

"The type of permanent building erected by these varying methods is similar, and is that which characterises our newer industrial areas, i.e., a two-storey brick cottage, containing two or three bedrooms, a living-room, a kitchen, and a bath. In Scotland a permanent dwelling of more limited accommodation is often provided. Far more variety in construction has been found possible in the provision of temporary accommodation, and excluding the adaptation of existing buildings three distinct types of provisional accommodation have made their appearance: Temporary cottages, hostels, and hutments, or groups of hostels. In two cases, moreover, the Ministry of Munitions has been obliged to provide temporary villages with their own schools, churches, hospitals, shops, and institutions. One of these munition villages is peopled almost entirely by Belgians. The temporary cottages for the use of munition employees correspond fairly closely with the usual type of permanent cottage, save that the former are built of wood or concrete instead of brick

and are usually one storey instead of two. They contain from three to five rooms, and are generally rented on the basis of from 6s. 6d. to 7s. 6d. a week for a three-roomed cottage.

"The hostel is usually designed to house about thirty persons, although larger erections have been made where the demand for the housing of girl workers has been pressing. It is provided with its own kitchen, dining-room, and common room, and to a certain extent life therein approximates to that of a large family. The hutment or colony system, where several hostels are grouped, is found particularly convenient where a large number of women workers must be accommodated. Each hostel is designed for the sleeping accommodation of from 100 to 130 persons, the dormitories being divided into cubicles, some single, some double. Adequate accommodation for bathrooms, etc., is always made in these dormitory blocks. Under this colony system, however, meals are usually partaken of in separate buildings, where the residents from all the hostels meet in the dining and recreation rooms. An administrative block is also erected, where the offices and rooms of the lady superintendent, matrons, and staff dispensary and invalids are located."

The reference to Scotland in the second paragraph of the above memorandum is rather provocative of comment. It rather tends to confirm the allegations made by correspondents in recent issues of this Journal to the effect that the Scottish working classes have been hitherto contented with a meaner type of dwelling than what is demanded in England and Wales. It should be noted, however, that in this respect the Scottish workers are waking up. At a recent meeting of Scottish trade unionists, strong objections were raised to the inadequacy of accommodation which certain municipal authorities proposed to provide.



# THE DESIGN OF MODERN FARM BUILDINGS.

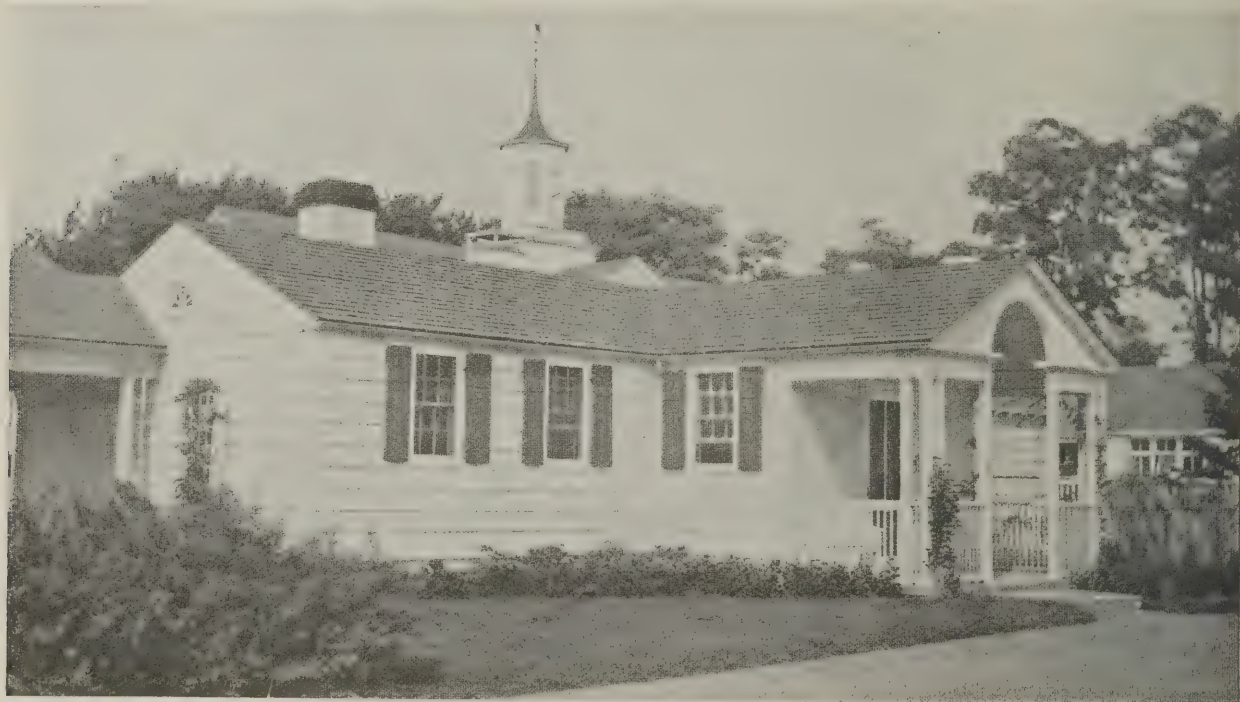
UNDER the stimulus of war-time necessity, farming in England is coming rapidly into its own again. If the war has taught us one thing more than another, it is that we must no longer be content to rely upon foreign sources for our food supply. That the farming industry, now happily revived, will be allowed to lapse after the war is not to be anticipated; rather is it likely to undergo considerable expansion in order that our national security with regard to foodstuffs may be definitely assured. In

view of the demand which has thus been created for farm buildings of a permanent type, it is interesting to see how the problem has been approached in America.

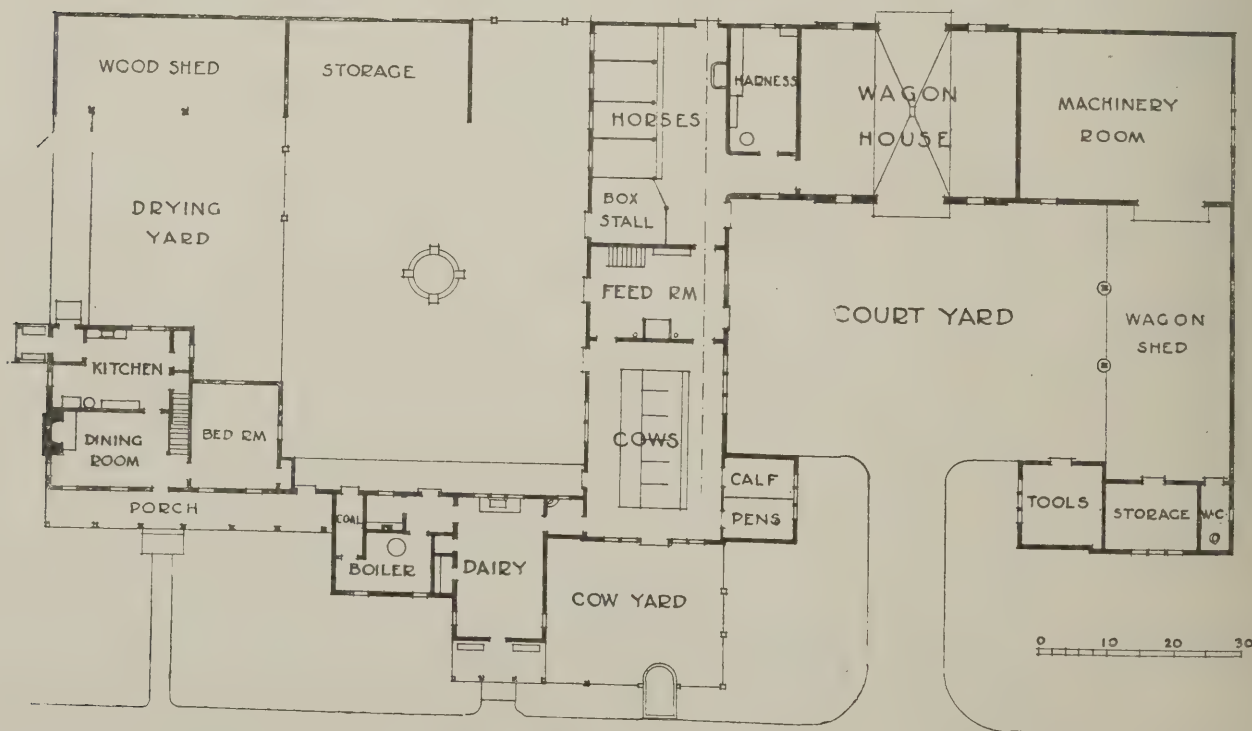
Farm life in America has been, up to a comparatively recent period, as varied in its aspects as it is diverse in its geographical location. As the country developed and its population increased, the "Star of Empire" set further and further to the westward. Vast areas acquired by railroads as bonus for the extension of

lines of communication were thrown open to settlement by purchase, and in addition the Government made it possible for settlers to acquire by "homestead" and "tree claim" an equally large territory.

The emigration to these lands was enormous. People in the East, finding conditions for good farming menaced by the rapidly increasing population, set out to the westward. The first consideration on the new farm was the crop. All others were of secondary importance. With the crop came the necessity for buildings to

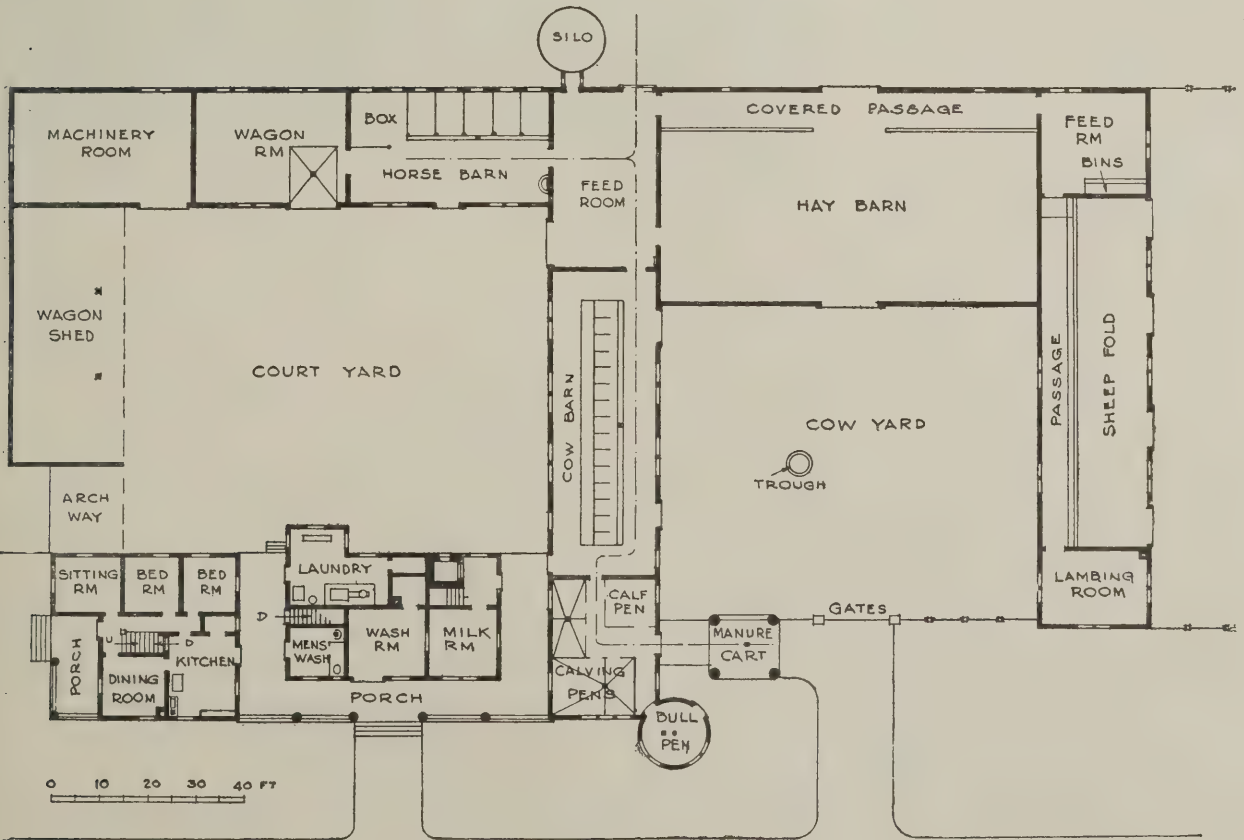
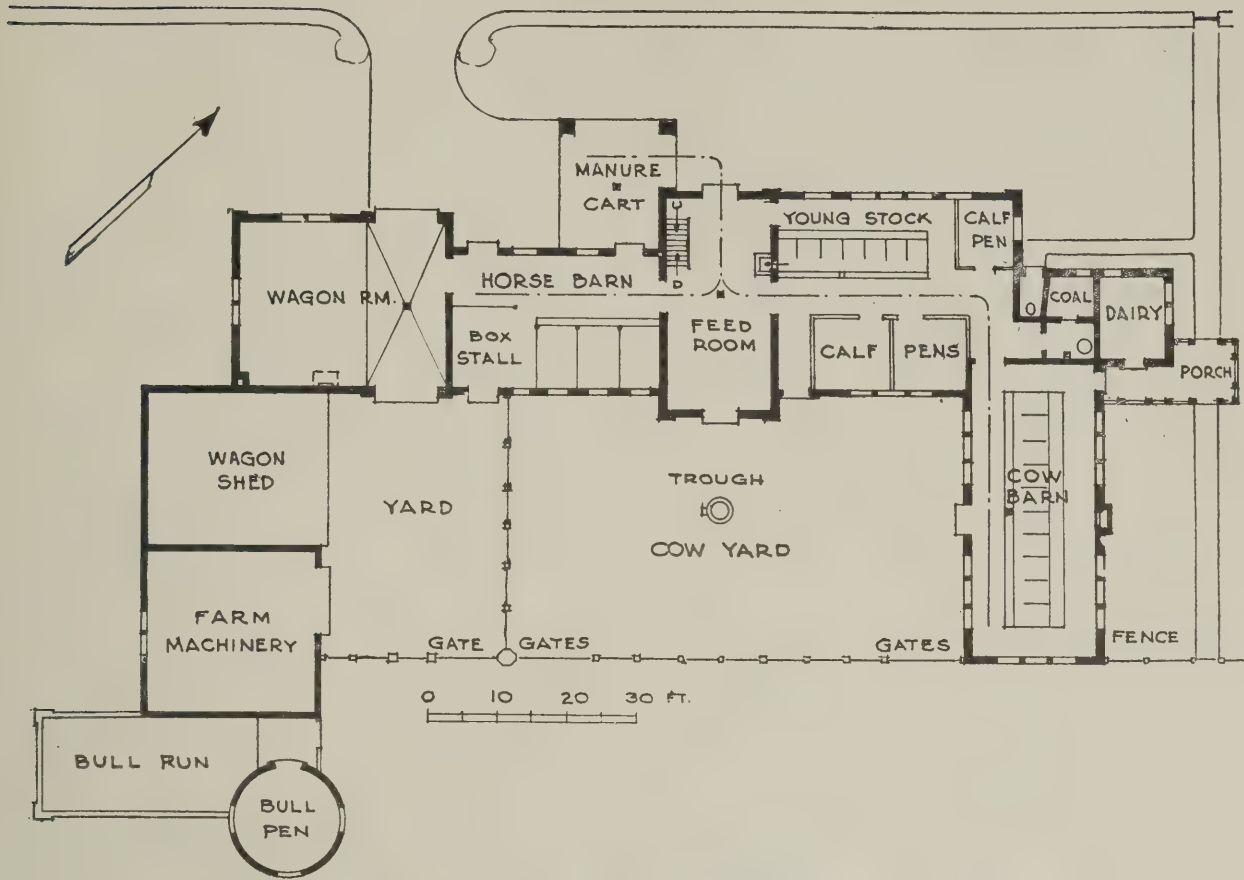


THE DAIRY.



PLAN OF A GROUP OF MODERN FARM BUILDINGS. ALFRED HOPKINS, ARCHITECT.





PLANS OF MODERN FARM BUILDINGS. ALFRED HOPKINS, ARCHITECT.

house it, and this pride of early success led to so great a disregard for the domestic side of life that the farm-house was regarded as of but small importance and in many instances the least attractive building on the farm.

What was born of necessity soon became habit, and the neglect of the farm-house was so much in evidence that some of the Western States, and even the National Government, set out to find means to encourage a better type of farm building and, consequently, a more attractive home.

One of the principal reasons for the younger generation refusing to follow in the footsteps of their fathers was the dull, uneventful, and sordid atmosphere in which they lived. Without the incentive of necessity that had spurred their progenitors, they were not inclined to take up a calling they had every reason to regard with disfavour.

Students of social conditions learned that reforms were not alone needed in the congested areas of cities. They took note of the decreasing number of men engaged in farming, and as Agriculture is the backbone of American prosperity, the problem of stimulating an interest in farm life, returning to the work those best fitted to pursue it, the sons of farmers, the subject became one demanding much study.

The housing question on the farm is as important as that in the city. With a choice between the sordid surroundings of the average farm-house and the greater allurements of city life, the solution was comparatively easy.

Stimulated by the encouragement of State and national authorities, the farm-house became something more than a "four-poster house with a lean-to," and took on some of the aspects of suburban dwellings. The progress during the past decade or two has been rapid. What may be accomplished when a trained architect applies his talent to the solution of this specific problem can be noted by the accompanying illustrations.

The highest form of art, because of most practical value, is that which deals with the refinement of the commonplace. Not only is it good art, but its educational influence is unlimited. Man is uncon-

sciously influenced by, and acquires temperamental qualities or characteristics from his surroundings.

It may therefore be safely stated that no more valuable service can be given by architects than the regeneration of a type of building that has through neglect born of indifference become degenerate.

In the construction of these buildings, frame, brick, stone, stucco, and combinations of these materials are employed. In their designing the same thoughtful skill and conscientious care have been applied as would have been given to more pretentious structures and for less utilitarian purposes. Convenience, accessibility, the most approved methods for heating, ventilation, and fire protection are in evidence. These features carried into all farm buildings are so desirable and really economical as to commend them to designers of this type of building. While the first cost is undoubtedly in excess of the earlier types, the subsequent saving and improvement of product entirely overbalance it. Under conditions such as are here shown, farm life becomes something more than a sordid and monotonous round of daily duties. It becomes a task of pleasure, and the effects of such surroundings will undoubtedly serve to correct the tendency towards city life and restore to favour the peaceful arts of husbandry. Our illustrations are reproduced by courtesy of the "American Architect."

## MUNITION MAKING IN JAPAN.

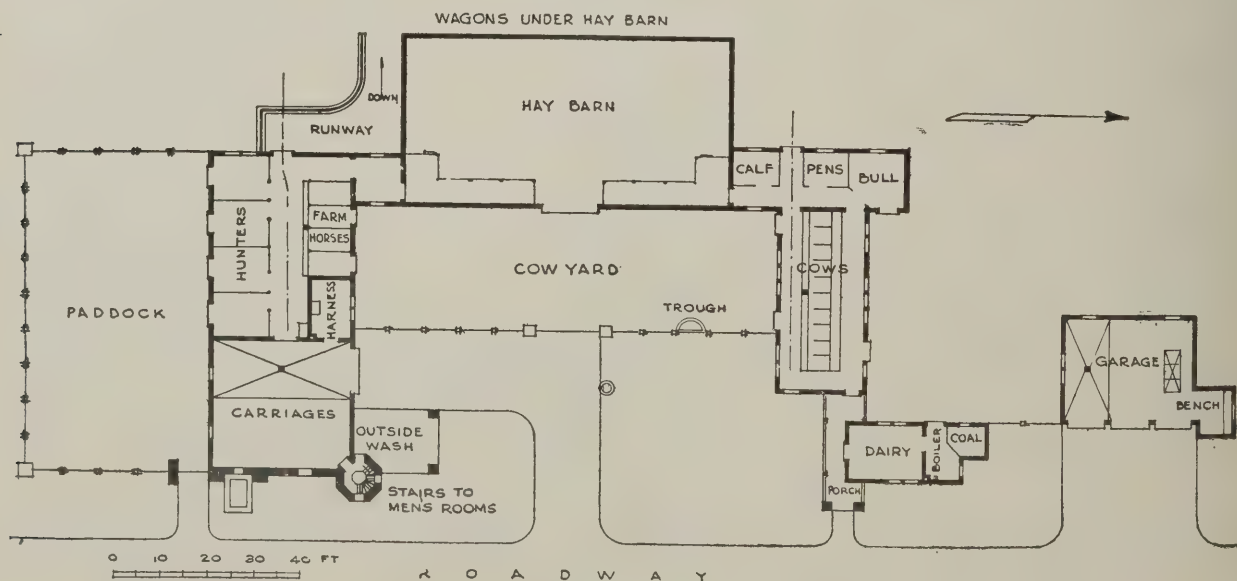
Somewhere in Japan, says a writer in the "Japan Magazine," there is a huge arsenal daily engaged in turning out munitions for the Allies of Japan. Here thousands of hands never cease operation; and the smoke above the giant works is like a cloud from a volcano.

The arsenal first showed what it could do in the way of meeting the needs of the army during the Russo-Japanese war, after which there was a lull in output until the demand came to help Russia instead of withstand her. After big war orders began to arrive from Russia, the 2,000 workmen in the Japanese arsenal increased manifold until now no fewer than 15,000 hands are busy there from day to day. Of course, a large number of the new hands are temporary; but the experts are all permanent. The skilled workmen naturally receive much better wages than those temporarily employed. The men labour from eight to ten hours a day, according to pressure of work. At present the demand for munitions is so insistent that the work goes on from seven a.m. to seven p.m., a twelve-hour day. The work goes on at night also, from seven p.m. to seven a.m.

The wages of the Japanese arsenal worker are small compared with the same kind of man abroad, being from 30 sen a day (8d.) to 1 yen (2s.) for a day of ten



COW BARN AND DAIRY.



PLAN OF A GROUP OF MODERN FARM BUILDINGS. ALFRED HOPKINS, ARCHITECT.



hours. The men are paid 20 per cent. more for overtime; so that a man who receives 30 sen a day will get 42 sen if he has to work overtime, while the man who gets one yen a day will get nearly two yen a day for overtime. The men have no time off save on Sundays and national holidays. The ages of the men range from sixteen upwards, and they are selected with strict care as to good character. Every man has some secret to keep; and only the best men can thus be trusted. After the age of fifty the arsenal worker has to drop out, when he has to live on the 30 or 35 sen a month he has deposited from his wages with the arsenal treasury. On leaving the work the man has this deposit returned to him. This custom applies only to the permanent hands employed at the arsenal. There are also many women employed at the works, and their wages are about half those paid to men. But a husband and wife engaged at the arsenal between them get a better income than a petty government official. [We wonder what our women munition workers would say to this. We do not suppose that they receive as much money as the men, but the discrepancy is much less than "about half." The Japanese woman, however, has hardly yet "realised herself."]

The operations of the arsenal are under the supervision of officers sent by the War Department and foremen from among the skilled workmen in the arsenal, the duty of the latter being to see that the directions of the expert officials are carried out. There is one foreman for every hundred men under him; and he has to serve the same number of hours as the men, with about 20 per cent. higher wages, without bonus. They get from 1.30 to 1.60 a day. In addition the arsenal is under the care of a number of police officials, whose duty is to see that none of the hands are unruly in any way.

As the work of the arsenal is strictly secret, everyone entering or leaving the great works is closely scrutinised. The workmen have each to carry a metal pass, the permanent hands having a nickel pass and the temporary hands a brass one, each pass being numbered. The pass must be worn as a medal on the breast, so as to be easily seen. The workmen don a special uniform of blue duck on entering the arsenal and take it off as they leave. Anyone desiring to go out of the arsenal for any purpose, even for a moment, must get a special pass on which to return.

As arsenal workers are supposed to have always some ready cash about them, various kinds of pedlars are always watching for them to get some of the money by persuading them to buy useless wares. The most persevering of these swindlers are known as Cheehaa men, and the arsenal police are always on the look out to keep them away.

Besides the military arsenal there are several big naval arsenals where munitions and arms are made by still more expert workmen. In these arsenals the wages are higher, the rate ranging from 12 sen a day to 3 yen; the most expert men make about 100 yen a month. Any man serving a year without a single absence gets a bonus of twenty days' wages. The day is about ten hours. The men wear blue overalls and the foremen black uniforms; and all have to carry metal passes. The men are promoted according to the ability they reveal; and some are so apt as to be worthy of being sent abroad for study as experts.

## BUILDING INTERESTS IN NEW SOUTH WALES.

The following extracts from the annual report of the Master Builders' Association of New South Wales will serve to convey an idea of the present position of the building industry there.

It has been decided to erect a temporary roll of honour in the Association Rooms, which will be replaced by a permanent one at the termination of the war.

In consequence of the war prices of materials still show an upward tendency, tradesmen and labourers have been granted increases in wages on account of the increased cost of living, and work of any magnitude is so scarce that builders are cutting prices to a bare minimum to keep their staffs going.

The falling off in the number of buildings in the city is, approximately, 41.75 per cent., and in the suburbs 32.11 per cent. The percentage of reduction of cost being less in each case.

Industrial arbitration continues to engage a great part of the time of the association's officers. The wages boards still continue to grant increases in wages and other minor concessions to the employees, and, as a general rule, when the awards of the wages boards are appealed against, the arbitration court either confirms the awards or grants some little concession to the men. Twice during the past year the arbitration court fixed the living wage at an increased rate above that previously ruling. On each occasion the court stated that men receiving above the living wage were not entitled, as a right, to get the full amount of the increase, but when the Stonemasons' board gave the men an increase of 1d. per hour on account of the increased cost of living, the union appealed and the court granted them 1¼d. per hour. Following on that decision, the Painters' board, giving its decision after the second increase in the cost of living had been decided by the court, gave the men an increase of 1¾d. per hour. This association and the Master Painters' association appealed against the award, but the court upheld the board's decision; consequently, when, at a later stage, the Carpenters' and Joiners' board awarded an increase of 2d. per hour no appeal was lodged on behalf of the association against the increase, more especially as evidence was given which could not be denied of increases in the cost of tools, and it is a well-known fact that the carpenters have to provide a more expensive kit of tools than any other trade in the building industry.

The continued agitation by the Institute of Architects and this association for the purpose of securing the passage of an up-to-date Building Act has at last had effect. During the past twelve months, Mr. A. F. Pritchard, President of the Institute, has devoted a great deal of time and energy to this matter, and it is to his efforts, assisted largely, we understand, by the Lord Mayor of Sydney, the Hon. R. D. Meagher, M.L.A. (who is also Speaker of the Legislative Assembly), that an Act has at last been placed on the Statute Book.

In the early part of the year the proposed regulations under the Height of Buildings Amendment Act were forwarded by the chief secretary to this association with a view to considering any alterations it might suggest. A sub-committee was appointed to go into this

matter, and a report was drawn up and forwarded to the chief secretary. A suggestion was made that before the regulations were fully passed a conference should be held between the department, the Institute of Architects, and this association; but for certain reasons, which, no doubt, seemed sufficient to the department, this suggestion was not adopted. The regulations are now in force, and will, no doubt, add considerably to the safety of the buildings which come within the purview of the Act.

The State Government has decided to establish a Chair of Architecture at the Sydney University—the first of this kind in Australia and the first in the British Empire as far as Government endowment is concerned. The Institute of Architects is to be sincerely congratulated on the success of its efforts in getting this Chair established, and it is to be hoped that the movement will meet with every success. With this end in view, the Institute is endeavouring to have certain scholarships founded, and it would be well for the association to consider the advisability of assisting in this direction when circumstances permit.

The position in regard to the new conditions of contract during the first twelve months since they were adopted by agreement between the Institute of Architects and this association has given rise to some anxiety. In some cases architects seem to consider that the conditions may be departed from whenever they think it is to the advantage of their clients, or whenever some little inconvenience may be avoided by ignoring them.

It has come under the notice of the committee that the old conditions of contract are still being sold, and that certain architects were asking members to sign them. This subject was promptly tackled and the persons printing and selling these documents were written to by the association's solicitors advising them that unless they ceased the operations objected to legal action would be taken. This action appears to have had the desired effect.

With the inauguration of the National Government in New South Wales, indications are not wanting that the wild orgy of Government extravagance in carrying on all sorts of business enterprises, and in carrying out public works by day labour will shortly be curtailed, if not brought to a full-stop altogether. The new Minister for Works, the Hon. R. T. Ball, M.L.A., received a deputation from the Quarrymasters, and stated that he would have full inquiries made into the matter of the competition between the Government and private quarries, and it has also been reported that while he intends to carry on those Government enterprises that are working at profit, he is not in favour of either continuing others which are carried on at a loss, or starting new enterprises. The Government enterprises are not charged with all the expenses that would be charged against them if they were private enterprises, consequently they are able to show either a fictitious profit or smaller losses than would be the case otherwise.

### *Housing in Dublin.*

The Lord Mayor of Dublin, at a meeting of the corporation, announced that the Chief Secretary had visited the different sites in the city on which the corporation proposed to build houses for working men with money which would be advanced by the Treasury. Work on one of the sites would be begun within a month.



## PUBLISHER'S ANNOUNCEMENT.

THE question of the cost of Advertising is governed entirely by the circulation of a publication. The prices for small Advertisements enumerated below are framed upon the lowest possible basis in order to allow the use of the columns of the Journal for "Wants," &c., at a figure well within the reach of everyone.

Advertisers are purchasing the circulation of a paper in buying space for their announcements, and we are able to announce that "The Weekly Nett Sale of The Architects' and Builders' Journal is larger than that of any other Architectural Journal."

### Appointments Wanted.

4 lines (about 28 words) 1s. 6d.; 3 insertions, 3s.

**ADVERTISER** (50) seeks berth on residential estate, or would manage business; thoroughly practical in all branches; estimating, controlling men, interviewing; moderate salary; highest references.—Taylor, 15, Fitzroy Road, Regent's Park, N.W.

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**THE** Association of Builders' Foremen and Clerk of Works, 56, Old Bailey, E.C.—Experienced Foremen and Clerks of Works can be obtained by applying to the Secretary, Mr. J. W. Sawyer, 214, Clapham Road, S.W. Competent foremen and clerks of works are invited to join this Association.

**WOODWORKING** Machinist Foreman (ineligible; age 35) requires position in first-class mill; thoroughly conversant with all machinery, setting, out joinery; capable manager; excellent references.—Apply 42, Sixth Avenue, Queen's Park, W.10. 993

**WOODWORKING** Machinist, with own machinery, now completing £2,700 contract, wants work for machines; every description of wood working undertaken except turnery; machining only or put together complete; nothing too large or too small.—Box 989.

### Appointments Vacant.

6d. per line.

### ARCHITECTS' WAR COMMITTEE.

The object of the Professional Employment Committee is to provide temporary paid work for British architects who are entirely dependent upon their profession for their living, and whose present difficulties are due entirely to the war. Applications can only be considered from architects who are ineligible for military service and unable to obtain War work of a professional nature. Enquiries should be addressed to the Honorary Secretary of the Committee at 28, Bedford Square, London, W.C.

### Miscellaneous.

6d. per line.



### CROWN LANDS, LONDON. PICCADILLY CIRCUS BUILDING SITE.

The Commissioner of H.M. Woods, Forests, and Land Revenues will be prepared to receive, not later than the 30th June, 1917, TENDERS for a BUILDING LEASE, for a term of 80 years, of the land at the South-east corner of Piccadilly Circus (adjoining the Criterion Theatre and Restaurant), comprising the sites of Nos. 24, 26, 28, 30, 32, 34, and 36, Regent Street, S.W.1, containing an area of about 6,950 square feet, having road frontages of about 73 feet to Piccadilly Circus, 112 feet to Regent Street, and 52 feet to Jermyn Street, and suitable for the erection thereon (after the War) of Shops, Showrooms, and offices, or similar buildings. Detailed particulars, plan, conditions, and forms of tender have now been prepared and can be obtained from Mr. John Murray, F.R.I.B.A., 11, Suffolk Street, Pall Mall, S.W.1, or from the Office of H.M. Woods, etc., 1, Whitehall, S.W.1.

**BOOKS**.—Books on Building Trades, Engineering, Educational, Literary, Technical, and all other subjects; second-hand at half prices; new books at discount prices; catalogues free; state wants; books sent on approval; books bought; best prices given. W. and C. Foyle, 121-123, Charing Cross Road, London, W.C.

**FOR** Sale.—Ruston Proctor 10-h.p. Portable Engine; 2 under-driven type, 7-feet mortar mills, 2 builder's hoists, complete with boiler, engine and cage; 1½ double-ended punching and shearing machine; 1 coke grinder, 12½-inch diameter by 150 ft.; galvanised steel wire guy ropes; can be viewed by appointment.—Edward Wood & Co., Ltd., Ocean Iron Works, Manchester. 992

### TO ARCHITECTS COMPETING. SCHEMES AND ESTIMATES FOR ENGINEERING WORK

(Lighting, Heating, Ventilation, and Sanitation), and Architectural Metal Work, supplied free of charge of **STRODE AND CO., LTD.**, 48, Osnaburgh Street, London, N.W., and 18, Easy Row, Birmingham.

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6d. per line.

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# THE ARCHITECTS' AND BUILDERS' JOURNAL.

JUNE 13, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1171.

IT will be remembered that we published, in our issue of April 4, a remarkable article on industrial organisation, and that we had previously, as occasion arose, noted the progress of the National Industrial Parliament movement. That movement, it would seem, has in it the elements of success. It has a programme which has been placed before the National Federation of Building Trades Employers, and by them sympathetically received. A joint conference on the subject between the Council of the Federation and representatives of workmen's organisations is to be held on June 20. In "Here and There," in last week's issue, our contributor attempted to account for "labour unrest" by ascribing it to "the original sin" of the factory system—the herding together under strict conditions of groups of workers who previously had been comparatively free and independent, and the exclusion of most of them from prospects of advancement for which the earlier conditions had given fuller scope. No one, it is true, had much or any chance that his talents would carry him to affluence, but all had opportunities of sharing such wealth as could be earned, and the factory system closed numberless avenues to competency. From the physical evils of the factory system the building industry was by its nature exempted; but, as our contributor observed, it could not altogether escape the spirit of the system, the "little master-man" adopting almost inevitably the prevailing habit of enriching the few at the expense of the many.

Hitherto, much bitterness has been imported into the discussion of industrial economy. Capital and labour have been everywhere and perpetually at loggerheads. On both sides there has been wanton and wilful misunderstanding. The master has blamed the workman, the workman the master, for conditions that neither could obviate. Masters and men have been alike the creatures of a bad system which, we would fain hope, is merely a passing phase of industrial development. Organisation on both sides, at first signalling and accentuating hostility between capital and labour, has at length, by bringing together in frequent conference the best wisdom of both parties, discovered that perpetual antagonism is untoward—wasteful of energy and wealth. It is seen that we can no longer afford to waste either. In the near future we shall want every ounce of it if the nation is to be spared the horrors of chronic bankruptcy. To avoid that calamity employer and employed must pull together heartily and with a good will. That we can do it the war has demonstrated, and the only question is, can we keep on doing it? Can we maintain that kindly spirit of co-operation that has brought us all together—peer and peasant, capitalist and labourer—more closely than ever before in our country's history?

On this point the promoters of the National Industrial Parliament scheme seem sanguine. Their first paragraph is worth quoting: "The two sides rarely meet," it runs, "except to make demands of one another or to compromise conflicting claims. In this way great powers of leadership and willing service are diverted from constructive work into sterile fields of largely useless controversy. The

hope of the future lies in the intimate and continuous association of both management and labour, not for the negative purpose of adjusting differences, but for the positive purpose of promoting the progressive improvement of their industrial service." Too long have we allowed ourselves to be choked and blinded by the dust of conflict. Constantly we have been told that "the interests of employers and employed are identical," but there has been too little evidence that this is anything more substantial than a bland and sterile theory.

Now, however, these matters are crystallised in a memorandum which the National Associated Building Trades Council has sent up from Manchester to the National Federation. The proposals in this remarkable document embrace the regularisation of wages, the problems of unemployment, the employment of disabled soldiers, technical education, and industrial organisation in general. Wages are to be put on a national basis—as nearly as possible identical throughout the country. Measures are to be devised for the prevention of unemployment and the decasualisation of labour. Provision is to be made to ensure suitable employment for partly disabled soldiers, and to ensure that their pensions shall not become the means of reducing the standard rates of wages. Technical education is to benefit the entire industry, and is to include not only the training of apprentices but also the improvement of processes, design, and standards of workmanship. Finally, the Industrial Parliament is to investigate and report upon all suggested lines of improvement alike in methods and organisation, works discipline and output, and the well-being and status of the personnel. It is truly an ambitious programme, but is none the worse for that.

If the Industrial Parliament comes into being it will be able to relieve the National Parliament of a burden which it is but ill able to bear, for it will no longer be asked to legislate on industrial matters of which so heterogeneous an assembly can have at best but a feeble understanding, and it will therefore be spared the perpetration of many an act of folly and injustice. It is not to be supposed that this movement is free from the difficulties—dangers, even—which always beset the path of reform, or that the present industrial system, the slow growth of many years, can be instantly transformed as by the waving of a magic wand. But the war has done much to change the whole industrial outlook, and to make inevitable a number of improvements that previously were regarded as Utopian. Throughout the negotiations it must be kept constantly in mind, however, that while all-round betterment is certainly a legitimate aim, the chief object is national and social welfare. To this all individual and sectional interests must be rigorously subordinated. Better organisation and equipment, scientific management, better work more willingly done, and the elimination of the disastrous wastage of strikes and lock-outs, would increase the prosperity of all parties, as well as that of the nation; but the nation comes first. If the aim is noble all will be well; if it is merely self-centred and self-interested, or sectional, things will go from bad to



worse. It is purblind groping that has led to all the trouble. Salvation follows the way of the long vista that opens out on a broad horizon.

\* \* \* \*

This manifesto was, we believe, prepared, at least in substance, well in advance of the Prime Minister's address to the Labour Party deputation, to whom he said that the present war presents an opportunity for the reconstruction of the industrial and economic conditions of this country such as has never been presented probably in the life of the world, and that "the country will be prepared for bigger things immediately after the war than it will be when it begins to resume the normal sort of clash of selfish interests which always comes with the ordinary workaday business affairs and concerns of the world. I believe," he said, "the country will be in a more enthusiastic mood, in a more exalted mood for the time being—in a greater mood for doing big things. . . . Therefore you are doing well in giving your time and thought to considering, and considering deeply, and considering on a bold scale, on a daring scale, what you are going to do after the war." He added, "I am not afraid of the audacity of these proposals. I believe the settlement after the war will succeed in proportion to its audacity." It is in this spirit that the memorandum has been prepared, and in the same spirit that it has been received by the National Federation. If the document becomes the basis of industrial reformation, as well it may, the building trades will enjoy the credit of pioneers in a great movement. Already they are in the van of progress; for it was they who introduced the system of conciliation boards of which the present scheme seems to be in the direct line of development.

\* \* \* \*

Professor William Paton Ker, in a pamphlet issued through the English Association, sets himself the task of discovering the spirit of "The Eighteenth Century" (which is the title of the pamphlet), and he finds it expressed—in literature, music, architecture, and painting—in the convention which "keeps the artists from eccentricity, vanity, and 'expense of spirit.'" Was not this really a recovery of the Greek spirit? Professor Ker's summary of its influence might be, and often is, comprehended in one word—restraint. It is this quality that renders the drawing of classical models so fine a discipline for students in the architectural schools, and it is the irresponsible and wayward exuberance of Gothic that has almost everywhere ruled it out as inapplicable to this purpose. It is for the same reason that we always deplore—as of late we have too frequently found occasion to—the demolition of eighteenth-century examples of building, which are nearly always models of dignity and repose, but they are "though gentle yet not dull," and, to continue the quotation, "without o'erflowing, full." That is to say, they satisfy without satiating. It is hardly too much to say that the eighteenth-century tradition of sobriety and serenity in art is the most potent force in the architecture of to-day—the more so since, in principle if not in form, its genealogy can be traced to Greece, though not in an unbroken line.

\* \* \* \*

In the unusually long list of birthday honours there are a few names that may be assumed to be of special interest to readers of this journal. First and foremost there is Sir William Hesketh Lever, Bart., who becomes a baron, and who intends, it is said, to assume the title of Lord Leverhulme, a happy conjunction of his own surname with his lady's maiden name. His public work is too well known to need recapitulation, and our readers hardly need the reminder that he has

founded civic and architectural chairs in Liverpool University, is an Hon. A.R.I.B.A., and the munificent and far-sighted founder of the world-renowned model village of Port Sunlight. A knighthood is awarded to Mr. William Hamo Thornycroft, R.A., the sculptor, and a similar honour falls to the portrait-painter Mr. Arthur Stockdale Cope, R.A. and son of an R.A. Dr. Richard Tetley Glazebrook, C.B., F.R.S., who also receives a knighthood, was president of the Institute of Electrical Engineers in 1906, and since 1899 has been director of the National Physical Laboratory. He is associated with the Cavendish Laboratory at Cambridge, was chairman of the Home Office Committee on Factory Lighting, and is the author of numerous text-books on physics and kindred subjects. The abnormally long list of birthday honours might have been much strengthened by compression.

\* \* \* \*

Miss May Morris has written to the daily press a timely protest against the closing of the museums, with special reference to the case of the Victoria and Albert Museum. "It is proposed," she writes, "to take from the bored soldier on leave, and the heart-sick woman waiting for news, one of the few opportunities left them of finding comfort and refreshment in our public galleries—of forgetting the war for an hour in the midst of the great art that has made the world a possible place to live in." She tells of Australian and Canadian soldiers she has seen turning back disappointed from the closed doors of our museums. Many of these soldiers must be artists or art craftsmen, whose desire to inspect our too jealously guarded treasures is prompted by no mere idle curiosity. How unwise, not to say inhospitable, to deny them their only opportunity of seeing "the things that matter," the world's great masterpieces of art and craftsmanship. What wonder if they carry back with them to the Colonies the opinion that London is a mean and an untidy city, controlled by mean and untidy minds! Miss Morris's use of the expression "the things that matter" will of course be challenged by those who think that nothing matters but the war; but their proposition would be more untrue than it would be to say that nothing matters but art. Miss Morris is not asking that our prosecution of the war shall be in any way hampered, but only that some of its horrors shall be mitigated by art, since art is a great consoler, healing the wounded spirit and renewing hope in the stricken soul. It is right, no doubt, to protect the treasures of art, but this might have been done without rendering them inaccessible for an indefinite period; and this action with regard to the Victoria and Albert Museum is particularly inopportune, because it consigns to oblivion the specimens of applied art which were never more desirable as objects of intensive study than they are at the very moment when a more or less successful attempt is being made to bring together art and industry for mutual advantage. "This is the most unkindest cut of all."

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Last week we commented on a proposal to erect a £300 war memorial at Lewisham, and we suggested that ten times that sum would be more in accordance with the importance and dignity of that large borough, as well as a more adequate tribute to the splendid record of Lewisham men (and we may add women) in the war. It is perhaps no more than a coincidence that the Mayor of Lewisham has consented to enlarge the scheme to the extent suggested. He is now endeavouring to raise the sum of £3,000 instead of £300, and we very heartily wish him all success in it—artistic as well as financial. That the former depends somewhat on the latter is demonstrated by the Lewisham clock-tower, in which the architect's design was sadly truncated for lack of sufficient funds.



## HERE AND THERE.

A DECENT interval having elapsed since the death of the second Baron Grimthorpe, who died a few weeks ago, I am perhaps at liberty to say a word or two about his uncle, the first Baron, who seemed to regard himself as the heaven-sent scourge of architects. He flagellated them for the good of their souls. He talked about them as if they were naughty boys—not bad at bottom, but all the better for occasional chastisement. Evidently he was one of the same grim school of thought as the author of the proverb that “A woman, a dog, and a walnut tree, The more you beat ‘em the better they be.” He hit hard at everybody and everything, yet without malice. He really loved architects; that is why he chastened them. He was their very candid friend, and they suffered him gladly. He wrote to a meeting of the Institute (where, I understand, he sometimes “lectured” in the fullest sense of the word) the following piece of advice: “Whatever you do, don’t call yourselves ‘artists.’ An artist is a man who executes, whether he more or less designs besides; and ranges from a Phidias or Apelles down to a ballet-dancer or a cook. You are artists in respect to your drawings, but not in respect of the buildings made from them; and experience has shown that there is no connection between the power of drawing nice architectural pictures and the power of producing fine buildings.” Note the Ruskinian ring of this delightful dash of dogmatism.

\* \* \* \*

Sir Edmund Beckett, as he then was, being a lawyer, knew the value of proofs. Therefore, in this case, he produced none. He simply laid down the law without citing his authorities. We are to be contented with dogmatic assertion. Phidias, Apelles, the ballet-dancer, and the cook would make a splendid quartette in a revue which I would go some distance to see; and a robustious bricklayer might be added quite congruously with Sir Edmund’s contention, which, unless I misread it, makes out the bricklayer to be rather more of an artist than the architect. For is not Bricky “a man who executes”? But, on this definition, the supreme artist would be the public hangman. For all his legal acumen, Sir Edmund had not sufficient prudence to keep clear of loose definitions. He fell foul of another hard-hitting critic of architects, Mr. John T. Emmett; and then the burning sparks began to fly like chaff from the threshing floor. Mr. Emmett retorts upon him: “Sir Edmund Beckett is himself an architect; he has ‘substantially designed sundry churches, and other buildings of considerable size.’ Of these the plans are good enough, the ‘graphic’ elevations are sufficiently ‘correct,’ and all the work is solid and well done; the buildings are, however, wholly destitute of true artistic feeling, they are coarse and dull. The railway churches at Peterborough and Doncaster might have been designed by some ambitious unimaginative engineer, without artistic faculty or power, who had gathered his details from books, with no perception of propriety or scale; thus illustrating with peculiar force Sir Edmund Beckett’s dictum, that ‘there is no connection between the power of making architectural drawings and the power of producing fine buildings.’ Two designs” (Mr. Emmett goes on—he was writing in the “British Quarterly Review” for April, 1881) “for the restoration of the west end of St. Albans Abbey Church have recently been published. One is by an architect, and is as weak as any other product of the Institute, mere accidental features being made essential elements of the design. But the rejected elevation seems a work of power and graceful fancy

when compared with the design accepted from Sir Edmund Beckett. This design is just the sort of thing that some ‘small architect’ would set his youngest clerk to do to keep him out of further mischief. The whole plan is wrong as a restoration of the west end of the church, which needs, what the old builders, it appears, intended to supply, two towers extending north and south entirely beyond the line of the aisle walls. The nave is so protracted westward that the end seems almost to be lost in distance. The eye, in memory at least—and memory is always acting as a most efficient element in architectural appreciation—does not retain a sense of limitation; and the long nave appears to be, without an obvious termination, undefined. . . . Distinctly he has missed his way; his new design is utterly beneath the lowest criticism. But Sir Edmund backs his enterprise with an unlimited supply of funds; and as he is, moreover, hopelessly unconscious and artistically undiscerning, it is difficult to blame a man so zealous and in such a painful case.”

\* \* \* \*

Mr. Emmett seems triumphantly to have overcome the difficulty—with all the more ease because he suspected the hand of Sir Edmund in an anonymous attack on Mr. Emmett, of which this is a mild example: “To pick out some apparently stupid thing, its surroundings not being referred to, that some architect has done, and represent it as the common practice of architects, is in plain English little better than lying.” On which elegant extract Mr. Emmett observes: “The ‘plain English’ is beyond the scope of our remarks; but it has all Sir Edmund Beckett’s gracefulness of thought and style.” There is so much more to similar effect that one is hardly in a position to appreciate the magnitude of the “difficulty.” Somehow, one does not feel poignantly sorry that it was overcome with so much success; because Sir Edmund was wont to lay about him very lustily, and it is rather exhilarating to find him so well matched. It was Sir Edmund who said, “Architecture or architects want only two things, expressible in two short words, taste and knowledge.”

\* \* \* \*

He was not himself so deficient in either department as his own buildings might lead one to suppose. There is, indeed, a great deal of shrewd common sense in his “Book on Building,” as well as too much dogma. He is sound on the incessant and fatuous demand for “originality”: “All this outcry for a new style is of the nature of crying for the moon, and is mere cant, repeated by one person after another without any one of them reflecting what it means. What we want is not a new style, but the genius or taste to build decently in any style. If a new one were invented to-morrow it would very soon be old and would be only one more than we have already to choose out of and copy. The varieties of geometrical forms suitable for building are manifestly not unlimited. It is true that we cannot prove that the limits have been reached,” but “if any man believes that other modes of building are still open, let him produce them; at any rate, he has no right to call upon us to accept his creed until he does.” “If you know of a better ‘ole, go to it.”

\* \* \* \*

He had little or no belief, either, in the creed that obsessed Mr. Emmett and other “paradoxers,” as Sir Edmund called them, some forty years before Mr. March Phillipps propounded it with such persuasive eloquence—that “The Hope of English Architecture” (the title of a much-discussed article

by Mr. Emmett that appeared in the "Quarterly Review" of October, 1874) lay in the workmen. Mr. Emmett declared "that the return to sanity in art is by a very short and easy way. . . . The method of historical comparison discovers art to be in every age the exclusive trust and treasure of the workman." This contention Sir Edmund vehemently opposes; for it, he says, "not one scrap of evidence has been produced," but, while rejecting the theory of instinctive, or spontaneous, or beehive co-operative building, he is willing to concede that the master builder was occasionally the designer—a proposition that nobody has ever denied.

In 1886 Sir Edmund Beckett became Lord Grimthorpe, but he did not think it beneath him to remain the candid friend of architects. In the "Nineteenth Century" for January, 1893, in an alleged review of thirteen essays on "Architecture a Profession or an Art," which was edited by Mr. (now Sir) T. G. Jackson and Mr. Norman Shaw, Lord Grimthorpe revived and re-stated all his old prejudices, with all his old positiveness and dogmatism. The only sign in it that age had at all mellowed him is what I take to be an attempt at a pun. "The letters A.R.I.B.A.," he supposes, "are professionally worth buying at the price they cost initially (in both senses)."

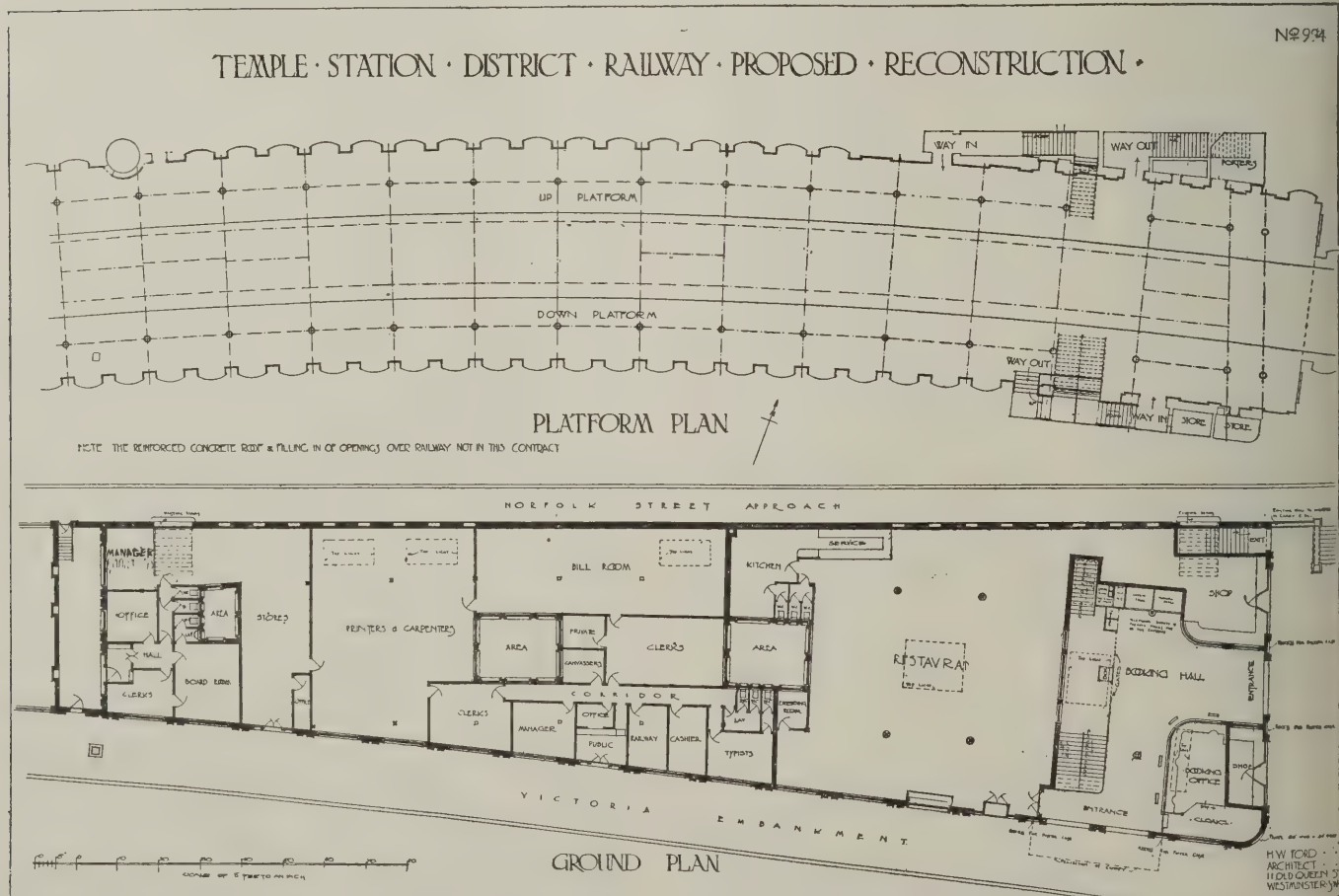
Taken broadly, he was that most amusing of persons, an unconscious humorist. He seems to have spent about two-thirds of a strenuous life in preaching good architecture, and the other third in doing it about as badly as it has ever been done on a large scale. Incidentally he was an excellent lawyer and an inspired mechanic in locks and clocks.

DIOGENES.

## PREPARING FOR RECONSTRUCTION.

A SERIES of articles on "The Rebuilding of the State" is appearing in the "New Statesman." In the opening article there is a much-needed caution against doing things meanly and in a hurry—building being one of them:—

Two hundred and fifty years ago the greater part of the City of London was reduced by fire to a condition not altogether unlike that of the zone of desolation over which the armies have been fighting on the Western Front. So long as the Great Fire lasted everybody was too busy on work of the most urgent national importance to be able to think about reconstruction. Immediately it was over, Sir Christopher Wren, and doubtless others, were prompt with the wisest possible projects for a reasonable "town-planning," which would not only have given us a beautiful new City, but would probably also have spared the inhabitants some of the insanitation and disease of the eighteenth century, and saved us, in the nineteenth century, much of the cost of very imperfectly widening the congested City lanes. But the plans came too late. Before the Government could take action, before the necessary legal formalities could be overcome, the "interests" got to work; every man started to rebuild on his own freehold ("business as usual"); and the tortuous, dark, crowded old City reappeared, of brick instead of lath and plaster, but otherwise with most of the mediæval imperfections. Only the Cathedral and the churches got the benefit of Sir Christopher Wren's deliberate planning; and of all the hurried rebuilding only the Cathedral and the churches have endured. Practically all the rest of the hasty reconstruction had, during the ensuing gene-



PLATFORM PLAN AND GROUND PLAN OF THE TEMPLE STATION, DISTRICT RAILWAY.

H. W. FORD, ARCHITECT.





CURRENT ARCHITECTURE (SERIES IV.). XXIV.—RECONSTRUCTION OF THE TEMPLE STATION,  
UNDERGROUND RAILWAY, LONDON.

H. W. FORD, ARCHITECT.







CURRENT ARCHITECTURE (SERIES IV.). XXV. — RECONSTRUCTION OF THE TEMPLE STATION, UNDERGROUND RAILWAY, LONDON: THE BOOKING HALL.

H. W. FORD, ARCHITECT.







DETAILS OF CRAFTSMANSHIP (SERIES II.). XXX.—CARVED OAK CHIMNEYPiece AND OVERMANTEL.  
BY J. EDMUND GROVE.







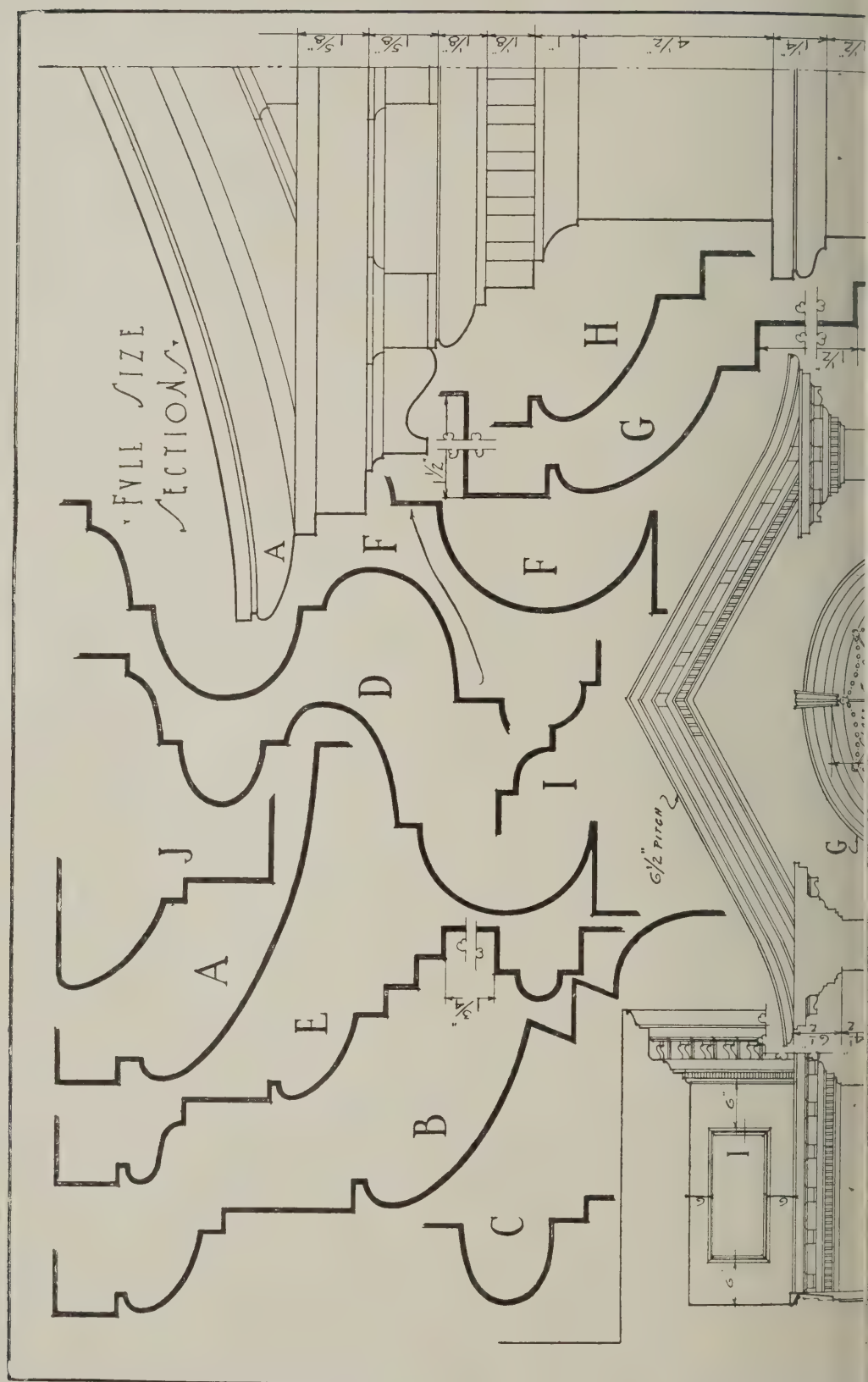
ARCHITECTURAL DRAWINGS AND SKETCHES. III.—THE FORUM OF NERVA, ROME.

*From the drawing by C. R. Cockerell.*

















## THE PLATES.

*Reconstruction of the Temple Underground Railway Station.*

IN our last issue we commented upon the transformation that has been effected on the old Underground Railway since the introduction of electric locomotion, and published some interesting illustrations of the scheme of replanning and reconstruction carried out at Charing Cross from the designs of Mr. H. W. Ford. In this issue we give a number of views of the Temple Station, which has also been rebuilt from designs by the same architect. It will be remembered that the Embankment front of the old Temple Station consisted of a bleak and rather forbidding brick wall. This has disappeared, and in its place we now have a dignified arcade of arches divided by coupled pilasters and crowned with a balustrade, the whole carried out in Portland stone. The new booking hall, of which a view is given on one of the plates, is typical of most others that are included in the rebuilding scheme. The reconstructed stations on the Underground are models of simple dignity of design and of convenient arrangement.

*Carved Oak Chimneypiece and Overmantel.*

This very fine piece of carving, in the manner of Grinling Gibbons, is the work of Mr. J. Edmund Grove. The total height is 11 ft. 6 in., and the greatest projection of the carving at the top of the overmantel is about 15 in., whereas the drops at the sides are about 9 in. All the carving is done out of the solid. The centre panel is so arranged that it can be either used for a painting or removed for a glass substitute. We are asked to state that the work is for sale; and we shall be pleased to put enquirers into touch with Mr. Grove.

*Cockerell's Restoration of the Forum of Nerva, Rome.*

The Forum of Nerva, of which a reproduction of Cockerell's fine conjectural restoration is published on one of the plates in this issue, was 150 ft. wide and 350 ft. deep, and at the farther end was a hexastyle temple dedicated to Minerva. The walls enclosing the forum on either side were nearly 100 ft. high, so that some scheme of decoration with regard to them had to be devised. This consisted of detached columns, with responds, of the Corinthian order, carrying an entablature. Above the entablature was a lofty attic story, with cornice and projecting pedestals above the columns carrying statues, and between these pedestals the attic was decorated with bas-reliefs. The columns and the facing of the wall up to the entablature were in Greek marble, and the frieze was decorated with reliefs representing the various handicrafts which were under the protection of Minerva. At the present day all that remains of this magnificent forum is two columns, the intervening wall with the entablature and attic story, and a relief of Minerva about life-size on the latter. The columns are buried about half their height, and the subject is a favourite one for artistic representations. The original from which our reproduction is made hangs in the Architectural School of the Royal Academy.

*Entrance to Bassett House, Hamden, U.S.A.*

This entrance is an excellent example of early American detail, built in 1819. It is constructed of white pine, except the shafts of the columns, which are turned from solid pieces of maple. Its most attractive feature is the curve with which the sloping roof is terminated on either side—a curve which is repeated in the main cornice of the house at the gable ends. Our reproductions are made by courtesy of the "Architectural Forum." The measured drawing reproduced on the double-page plate in this issue is by Mr. Frederick Kelly.



DOORWAY OF THE BASSETT HOUSE, HAMDEN, CONN.

rations, at vast expense, to be done over again, and done differently. . . . Unless we manage, somehow, even during the stress of war, also to think out plans and come to timely decision upon the various social reconstructions that ought to follow the war, the nation will find itself repeating, on a larger scale, and with even more calamitous results on national life, the dreary experience of the rebuilding of the City of London after 1666, without even a St. Paul's to the credit of the national forethought.

## CORRESPONDENCE.

*To the Editors of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

*War Memorials.*

SIRS,—In your leader last week you refer to our North Wales Heroes' Memorial. We appreciate your kindly comment, and agree with your general policy, which is against the premature erection of public war memorials. But there are exceptions to most rules, and the North Wales scheme has special characteristics.

For some years we have been endeavouring to solve the problem of new science buildings for the University College of North Wales. Recently, Mr. R. J. Thomas, of Holyhead, to whose happy inspiration is due the inception of the scheme for incorporating a memorial to the men of North Wales who have fallen in the war with new science buildings, opened a fund with the very handsome donation of £20,000, and this amount has already been about doubled by other friends. The full scheme involves an outlay of £150,000.

The intention is to set up an enduring memorial to the fallen heroes, for if the Empire is to prove worthy of the heroic sacrifices made by the flower of its youth in this war, and to continue to play a leading part in the world, and in the advancement of civilisation, the Mother Country must take her full share in the after-war development of Imperial resources. Her main contribution to this task should be a fresh army of vigorous young men and women, thoroughly trained in science and business organisation.

G. A. HUMPHREYS.



## NEWS ITEMS.

*£20,000 New Building in Newcastle.*

Plans for the erection of a new building at a cost of £20,000 by Messrs. T. Howe and Co. in Sandyford Road, Newcastle, have been approved by the Town Improvement Committee. The buildings, which will be 320 ft. in length, will include shops, offices, blacksmiths' shops, and stabling accommodation for 200 horses. The work will be commenced at the end of the war.

*St. Aldwyn Memorials.*

The Archbishop of Canterbury dedicated, on Ascension Day, the work of adornment and enrichment of the chancel and sanctuary of Coln St. Aldwyn Church, which Countess St. Aldwyn and her three daughters have carried out as a memorial to the late Earl St. Aldwyn and Viscount and Viscountess Quenington. The work includes an oak reredos and altar-rails, linen-fold panelling on the walls, and oak choir-stalls.

*Waterproofing a Dock.*

We have received an account of one of the most interesting instances of the efficacy of waterproofed cement. The case in point is a dock "Somewhere in England." At high tide the sea water almost reaches the top of the retaining wall of the dock, and much trouble has been occasioned owing to water penetrating the wall. Many remedies were unsuccessfully adopted, and owing to an advertisement seen in the technical journals Pudlo cement was used with perfectly successful results.

*Sir Ernest George, R.A.*

Sir Ernest George, A.R.A., who has been elected a Royal Academician, was born in 1839, studied at the Royal Academy Schools, and won the Gold Medal for Architecture in 1859, and in 1896 the Queen's Gold Medal of the Royal Institute of British Architects, of which body he was President in 1908-1909. His professional architectural work is well known, and as an etcher he has published plates of the Moselle, the Loire, Belgium, and Venice. He was elected an Associate of the Academy in 1910 and knighted in the following year.

*Marlborough College War Memorial.*

It has been decided that the Marlborough College War Memorial shall comprise the following objects: (1) A cloister on the south side of the chapel, on the walls of which the names of those who have fallen will be inscribed. (2) The education at Marlborough of sons of O.M.s who have fallen or who have been incapacitated in the war. (3) Any surplus will be applied for the establishment of an Endowment Fund, or will be used for such other purposes as the committee of the Marlburian Club may recommend. It is hoped to raise £20,000 for the above objects.

*A Sea-going Concrete Ship.*

The Fougner Steel Concrete Shipbuilding Company of Moss, Norway, which have hitherto only built small lighters and barges, have now contracted for the construction of two sea-going motor ships. Some time ago a committee was formed in Norway to inquire into the conditions on which ships built by this company might receive recognition by the authorities. Meantime the firm has obtained permission from the Norwegian Government to build two motor vessels as test ships, one

of which will be of about 600 tons capacity, to the order of Mr. G. M. Bryde, Christiania. The dimensions of this vessel will be: Length, 145 ft.; breadth (on concrete), 27½ ft.; depth of hold, 15¼ ft. Engines and accommodation for crew will be placed aft, and on the long roomy fore-deck there will be three hatches with winches. The construction of this ship is a great forward step in Norwegian enterprise, this being a new departure in ship-building, and looked upon by many with great scepticism.

*Dissolution of Partnership.*

From an announcement appearing in our advertisement pages it will be seen that the partnership of Messrs. Briggs, Wolstenholme, and Thornely has been dissolved by mutual consent as from May 31, 1917. Mr. Frank Gatley Briggs and Mr. Arnold Thornely will continue to practise as architects and surveyors under the style of Briggs and Thornely at Royal Liver Building, Liverpool, and Merlin Road, Blackburn, and Mr. Harry Vernon Wolstenholme will continue to practise as an architect and surveyor under his own name at Central Buildings, Richmond Terrace, Blackburn.

## GOVERNMENT RESTRICTIONS.

*Building Licences Necessary.*

With a view to removing misconceptions which have recently arisen in various parts of the country, the Minister of Munitions directs attention to the fact that no building or construction work costing over £500, or involving the use of structural steel, can be undertaken without a licence from the Ministry. It is pointed out that such a licence is as necessary for work involved in the restoration of property destroyed or damaged by fire or aircraft as for work undertaken in other circumstances.

*Restrictions on Sale and Purchase of Builders' Machinery.*

In pursuance of the powers conferred upon him by Regulation 30a of the Defence of the Realm Regulations, the Minister of Munitions orders in a circular dated June 5th, that the war material to which that Regulation applies shall include war material of the following classes and descriptions, namely: All machinery driven by power and suitable for use in cutting, working, or operating on wood, including: Sawing machines of all descriptions, general joiners, mortise, tenon and boring machines, lathes and rounding machines, box and cask making machines and all machines accessory thereto. Scraping and sandpapering machines, wheelwright machinery, firewood making and bundling machinery, wood woolfibre and pulp machinery, saw sharpening and setting machines, saw stretchers and brazing apparatus, all machines for grinding, planing or moulding irons. All applications for a permit to purchase or enter into negotiations for the purchase of the war material referred to in the above Order should be made to the Executive Officers of the Area Clearing House Boards, whose addresses may be obtained upon application to The Director, Central Clearing House, Ministry of Munitions, Charing Cross Buildings, S.W.2. All applications for a permit to sell or enter into negotiations for the sale of the war material referred to in the above Order should be made to "The Director" of Wood Working Machinery, Charing Cross Buildings, S.W.2.

## TRADE AND CRAFT.

*"Agatex": Cement and Concrete Floor Hardener.*

Cement and concrete floors that are subject to hard wear frequently become a source of inconvenience to business and a danger to health. Surfaces begin to granulate, or "dust," and soon develop soft spots, which speedily wear into holes; and patching and repairing them become necessary at regular intervals. The dust that is produced by wear is a great annoyance, if only it settles on materials and manufactured articles; but to machinery and electrical equipment it is particularly detrimental. Moreover, a floor that is constantly "dusting" cannot be kept perfectly clean; and the faster it disintegrates the more insanitary it becomes.

A soft, granulating cement floor may be due to a variety of causes. The cement or sand may have been of an inferior quality, or may not have been properly mixed and applied. The cement may have set unduly fast, thus causing crystallisation before the floor had been fully trowelled; or, alternatively, it may have been so slow in setting that the smoothing of the floor by the trowel had the effect of weakening and breaking down the process of crystallisation. Again, the cement topping may have been laid on concrete that absorbed water, thus robbing the cement of the amount of moisture necessary for proper chemical action. To give hard, durable properties to such concrete floors the elements in the cement must be chemically transformed. New compounds must be formed which are harder, denser, and offer more resistance to wear.

Such a transformation is effected by the application of "Agatex," the chemical compound that has been produced by the Trus-Con Laboratories for preventing the wearing and "dusting" of concrete floors. "Agatex," which derives its name from agate, because of its hard, smooth, wear-resisting qualities, transforms a soft, "dusting," or granulating cement floor into a hard, smooth-wearing surface without changing its colour or appearance, the principle of its action being, primarily chemical. "Agatex" utilises the chemical activity of the elements in the cement to form new compounds of cementing value that bind together the loosely held particles of sand and form a surface that is hard and resistive to wear. "Agatex" is comparatively inexpensive, and is easily applied with a long-handled brush at a small cost in labour. One of its principal advantages is that its use does not involve a floor lying idle during treatment. Three separate applications are necessary. The compound may be applied on any three successive evenings, and on each following day the floor may be used without in any way harming or retarding the chemical reaction. After the third application the chemical reaction is complete, and the floor presents a hard, smooth surface—wearproof, dustproof, and sanitary.

We have much pleasure in adding our own personal testimony to the excellent qualities of "Agatex," which accomplishes all that its producers claim for it. The concrete floor of our publications stock-room having given considerable trouble and caused no little inconvenience through the "dusting" of its surface, it was treated with the "Agatex" preparation, and has since given complete satisfaction in every respect.





## WAR BUILDINGS SECTION

### WOMEN IN WAR WORK.

**M**ULTITUDINOUSLY and right nobly have the nation's women responded to the call for national service. High and low, rich and poor—peeress, University scholar, shop-girl, factory-girl—have forsaken their normal activities and taken up with courage and energy, and with rapidly increasing skill, almost every kind of labour, light and heavy, that men have had perforce to forsake for such time as men's work is to confront the foe. Railway porters, 'bus conductors, letter-carriers, police, clerks, gardeners, agriculturists, munition-workers are now—with the exception of the last-named—mostly of the "softer sex"—an expression that may

have to be abandoned if the hardening process of strenuous labour is much longer continued.

And women are largely engaged in all sorts of building operations—mainly as a matter of war-service. Our illustrations show them at work on various buildings required for the Government. Roughness and laborious tasks do not daunt them. They revel in hardships from which in normal times they would have instinctively recoiled. Large bands of women have been trained in carpentry and sent off to France. In every department of the building industry, from the architect's office to the labourer's hod, they are working cheerfully and with a vigour and

strength that could hardly have been anticipated from them. Their patriotic activities will leave indelible marks on the race to which they help very considerably to make us proud to belong, and also they will give us many new views of industrial conditions. After the war many of them will claim, quite justly, to be retained in the positions which they have so admirably filled, and thus they will create new industrial problems which trade-unionists may find it difficult to solve—less difficult, alas! from the melancholy fact that so many of the gallant men whose places they have taken will not return. Women will bring, without a doubt, a considerable degree of refine-



MAKING CONCRETE PIPES.



HANDLING AND TRANSPORTING BRICKS.

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ment and amenity to many occupations. True, this has not been hitherto a marked result of the employment of girls and women in factories; but, then, the material was rougher to start with. Now, however, that the fine flower of womanhood has come to the rescue of the country, the woman will have more influence on occupation than occupation will have on the woman, and much that is unlovely and untidy will disappear from industrial buildings. For the moment women workers are putting up with a great deal of inconvenience that they will not tolerate in normal times, and their comfort and convenience will have to be studied more scrupulously than is at present possible. Demands that nobody thinks of expressing just now will be put forward and will have to be conceded, more especially since women will be enfranchised, and will be sure to exercise that privilege for the benefit of women workers; among whom, indeed, there are already some of the ablest and most active industrial economists of the day—for example, Mrs. Sidney Webb, Miss Clementina Black, Miss Mary Macarthur, Miss Margaret Macmillan, and many another noble woman who has made it her life-work to assert the rights of women workers. If, in the whirligig of events, it should happen that, in Britain as in some other countries, brickmaking, bricklaying, carpentry, plumbing, and so forth, become recognised hereafter as regular occupations for women, a result that—except as regards brickmaking—one hardly anticipates, and would not like to see materialised—there will ensue a mild revolution in those industries. It should mean betterment. But will it? We do not want to see Britain's womanhood coarsened with toil, unless after-the-war economic conditions, at present but dimly

foreseen, make this sacrifice imperative. In the meantime, our grateful thanks to them for the hardships they are gladly enduring for old England's sake.

#### *Exhibition of Women's Work at Bristol.*

This exhibition, which is being held at the Royal Colonial Institute, Bristol, is one of a series which has been arranged for various industrial centres by the Labour Supply Department of the Ministry of Munitions in order to demon-

strate to those interested the highly important part which women are now taking in connection with the production of munitions of war. The work which women have proved themselves capable of doing successfully, both from the technical and economic standpoints, is wonderful in its variety, and now comprises processes which require a very high degree of skill.

The exhibition, which was opened on May 30 by the Lord Mayor of Bristol, is the second of the series, the first having been held in London in March. This was entirely successful, and the interest it aroused exceeded expectations. The present exhibition contains a greater variety of specimens than were available for the former one, and care has been taken to furnish the visitors with the most detailed information possible regarding the various articles. The new specimens comprise a fine collection of breech mechanism details for several sizes of guns, and the additions made to the collection of gauges, cutters, and tool-room and precision work of all kinds are noteworthy. Besides the actual specimens of work, which cover the benches, the exhibition contains many hundreds of fine mounted official photographs illustrating the employment of women on machines and processes of which it is impracticable to furnish samples.

A summary of the activities of women illustrated by the photographs and samples at Bristol is all that it is possible to give, and an outline of the ground covered by the exhibition may be indicated by the following brief description.

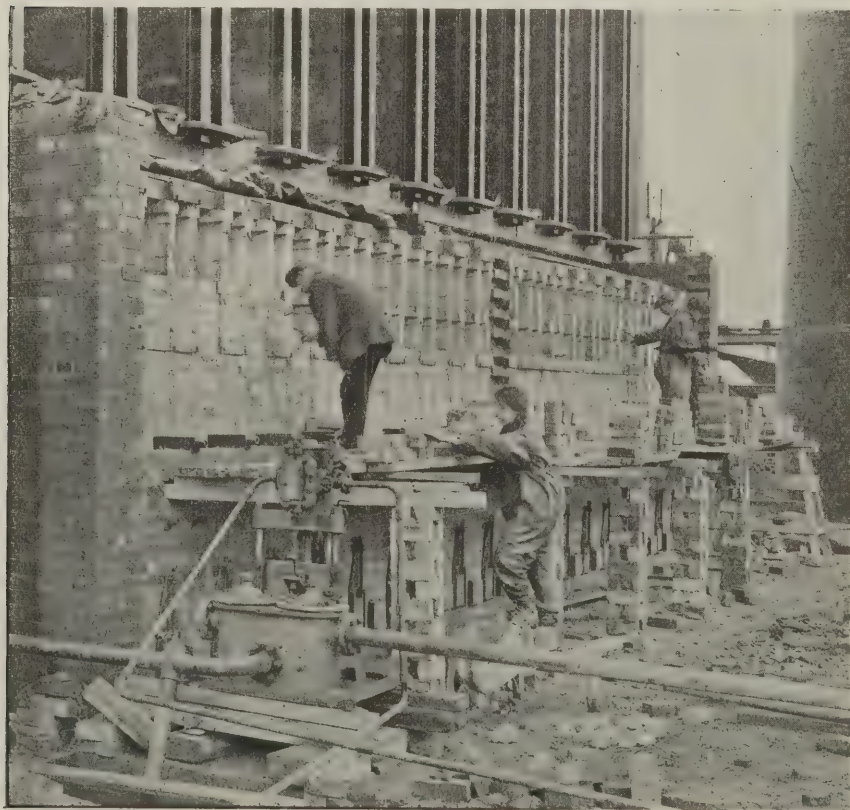
#### *General Labouring.*

In various quarrying and building work women are seen excavating, mixing lime, stone-breaking, sieving, and feeding slag-crushers for mixing concrete, handling bricks and mixing mortar, and acting as bricklayers' labourers (see the accompanying illustrations). In blast furnaces they are unloading and stacking limestone and fuel, stacking stove bricks, and doing general yard work. In forges, rolling and wire mills, they are checking and loading shell forgings, stamping and scaling them, and loading wire reels into trucks. In



WOMEN STACKING WOOD.

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WOMEN AS BRICKLAYERS' LABOURERS.

*(Published by Special Permission of the Ministry of Munitions.)*



machine shops they are doing general labouring, including oiling shafting, cleaning, and painting.

#### *Semi-Skilled Heavy Work.*

(a) *Wire and Rolling Mills.*—In wire and rolling mills they are shown rolling cartridge metal; they pickle, dry, and gauge cartridge metal strip to .001 in. and bundle it; groove and scrape copper wire, and prepare it for drawing; operate barbed wire twisting machines, lace up and face off reels of barbed wire, and operate a variety of wire-rope stranding and winding machines.

(b) *Explosives: Soap and Chemical Works.*—In the manufacture of explosives and chemicals they are seen loading raw materials into ships, picking cotton waste, charging nitric acid stills with nitrate and stoking them, nitrating cotton and emptying the product, bagging T.N.T. and taking charge of the compressed-air pumping station for the sulphuric acid lifts. In soap-making and other industries they are shown acting as labour-assistants.

(c) *Foundries.*—In foundry work they are shown making cores, operating a variety of moulding machines, stump-moulding, and carrying moulds from the machine to the trolley. In other views they are fettling, riddling, and transporting sand.

(d) *Constructional Engineering.*—In constructional engineering women are seen both as helpers and as operators on heavy as well as light work; cutting steel-bar on a circular-saw and on a band-saw, drilling angle and T-bars, operating a large punching and shearing machine on junction and tie-plates, cutting gear on a gear-planer, working a buffing machine on angles and cover-plates, operating and helping on hydraulic riveting machines, and pneumatic riveters, and working edge-planing machines. In one view four women are in charge of twelve drilling machines, working on a steel boom for bridge girders; in another a woman is in charge of three radial drills on a lattice girder for a railway bridge, in another drilling the cast-iron bed-plate for roller bearings for a railway bridge. Elsewhere they are seen working with hack-saws, painting and assisting platers' helpers in

work such as assembling steel girders. In one view a woman is helping with a hydraulic riveter, steadying and placing the machine on hot rivets; in another a woman is marking out channels for the main boom of a girder for a railway bridge.

#### *Shipbuilding and Marine Engineering.*

In shipbuilding and marine engineering photographs show women electric wiring on board, counter-sinking plates, operating radial drills, grummeting, tubing, and expanding condensers for marine engines, cutting flats on columns of launch engine with 16-in. shaper, turning propeller shaft liners, and connecting rods for marine engines, scraping up pistons and bedding junk rings, and operating drilling, boring, and a variety of other machines on eccentrics, fly-wheels, bed-plates, etc. A number of views show them trimming and polishing turbine plates and building up motors.

In some views the operator is doing skilled work—setting up her tools, for example, for non-repetition work, scraping and fitting various parts, marking off a variety of parts on the surface table, etc.

#### *General Engineering.*

A still greater variety of work is seen in general engineering. Women are shown attending power-plant up to 1,000 I.H.P. Belliss engine, taking charge of electric generating plant and large switchboards, operating electric overhead and jib cranes up to 60 tons, and driving electric trucks; welding both electrically and with oxy-acetylene burners, and cutting plates with the oxy-acetylene flame. A shopful of women is seen dismantling, repairing, and reassembling entire coin-freed gas-meters. In the machine shop various views show women boring a boiler-shell, placing boiler-plates on an edge planer, drilling a boiler plater on a radial, operating a radial drill surfacer on boiler-flue flanges, and operating a boiler-plate bending machine.

In a locomotive shop they are seen working slotting, slot milling, horizontal milling, shaping and other machines on motion details and other loco. parts, and a variety of other machines; screwing bolts, boring fire-box stays, file polishing connecting rods, pipes, etc. Specimens

are shown of an engine axle-box, drilled, planed, bored, and radiused with taper heads and grooves, milled and keep fitted; a bogey wheel centre, and other loco. parts.

In many views women are both operating and setting up tools and work on a variety of machines used for non-repetition jobs, and marking off and fitting seatings and parts for loco. work.

#### *Tool Room, Gauges, and Precision Work.*

The section of tool room, gauge, and allied work deserves particular attention because many of the specimens shown illustrate very strikingly what is also to be found in the other sections—the ability of women to undertake not only the repetition work, but also individual jobs with short runs, for which the operator sets up both the work and the tools. Among the specimens shown are complete ring gauges for 18-pdr. and 8-in. howitzers, and cylinder gauges for 60-pdr. and 4.5-in. howitzers; cartridge-case drawing, tapering, and heading dies, and case heading and bullet-forming punches; a complete set of punches and dies for small ammunition, spade cutters from 3 in. to 9.2 in. for shells, lathe tools, and a variety of twist-drills, milling and shell-boring cutters, reamers, drill-chucks, and parts, and plug, ring, and thread gauges. A notable exhibit is a pair of taps and dies that were made complete in the ordinary course of manufacture, except for the backing-off of the dies, by women of three weeks' experience.

#### *Gun Components and Small Arms.*

In the manufacture of guns, women are seen engaged on parts for howitzers, naval guns, and wagons, and specimens of a large number are shown. These include elements of a considerable variety of sizes and descriptions, from the 3 pdr. Hotchkiss to the 8-in. howitzer. The parts of breech mechanisms in particular are shown in much detail. A large clinometer and a number of parts for gun-sights, as used in our own and in Allied armies, are also exhibited.

Many views show women on the manufacture of small arms; chasing the thread on the breech-end of a rifle barrel for attaching it to the bolt action, rifling and



ASSEMBLING STEEL REINFORCEMENT FOR REINFORCED CONCRETE PILES.

(Published by Special Permission of the Ministry of Munitions.)

fine-boring and grinding the barrel to close gauge, milling the bolt and sides of fore-sight, drilling the axle-hole in back-sight and spring-hole in back-sight bed, reamering it to fit barrel and pressing it on to barrel. They are seen performing similar work in the manufacture of machine-guns. Specimens are also shown of parts of the Lee-Enfield rifle, as well as of Lewis, Vickers, and Maxim guns made entirely by women.

*Machine Tools.*

In machine-tool making women are seen lining the fast heads of lathes to micrometer, scraping beds and saddles and head stock bearings of lathes, scraping and bedding down slides of radial drills, erecting lathes, and fitting and assembling counter-shafts, turning pulleys, planing bevelled gear, boring hand-wheels, shaping miscellaneous parts, operating and setting up turret lathes on small parts, grinding friction rings and taper pins (the latter to a limit of .0005 in.), milling bevelled teeth on horizontal millers, and pump covers and other parts on vertical millers, and on tur-

ret lathes, making interchangeably all the parts of self-opening die-heads, specimens of which are exhibited.

*Projectiles and Trench Warfare.*

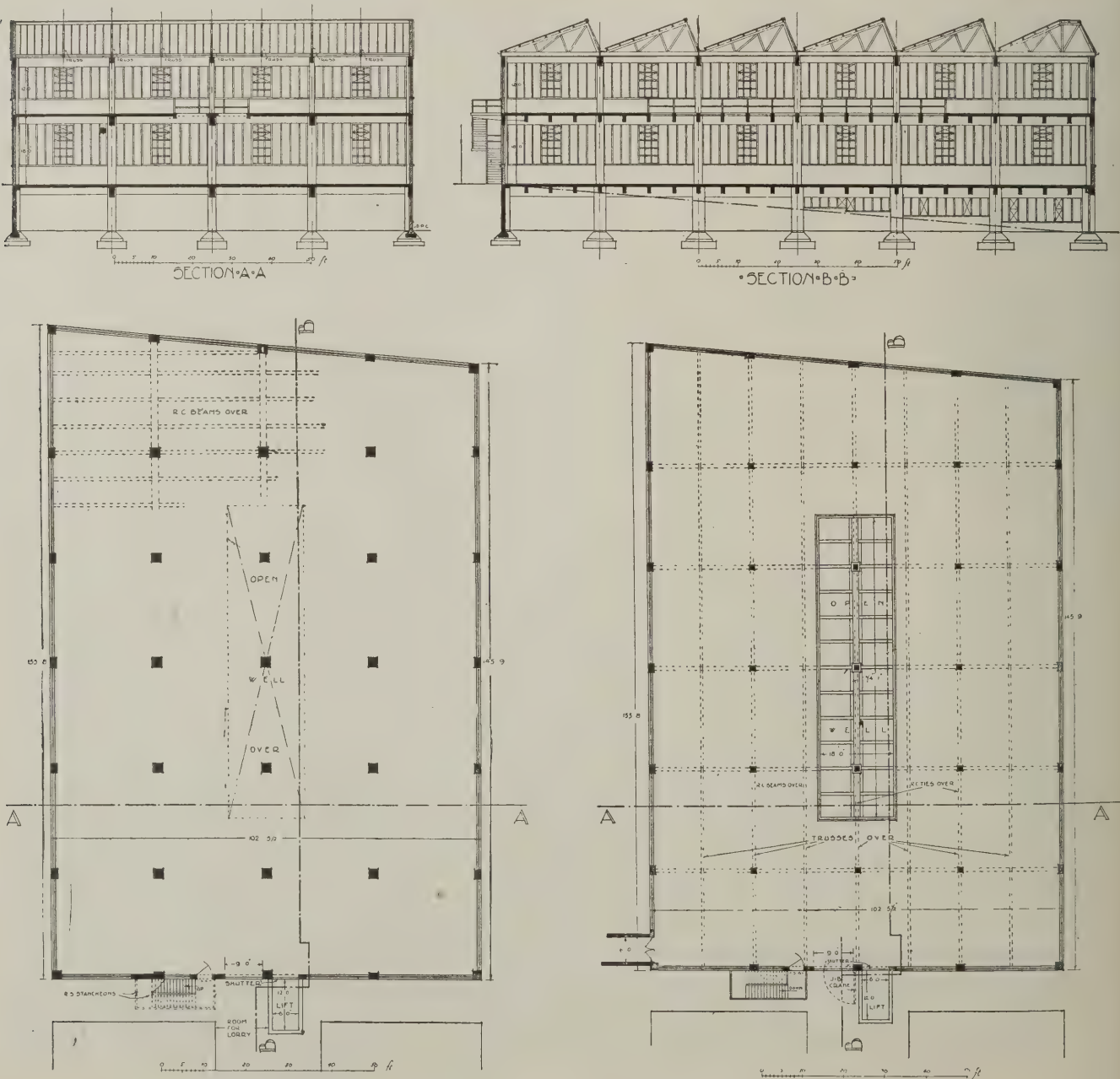
The operations now undertaken by women in the production of shells and fuses covered practically the whole manufacture of the smaller sizes and many of the larger. It is therefore needless to specify the various operations that are illustrated and exhibited. Devices are shown for lifting 9.2-in. shells, handling 6-in. shell billets with tongs 7 ft. long, and forging them in a 300-ton press and inspecting the finished shell.

Among the specimens are a number of the principal patterns of fuses, some in three-quarter section showing the internal construction; a series of howitzer cartridge-cases in various stages of preparation; and the finished Stokes bomb with an assortment of its parts. Among the sundry appliances of trench warfare are an aerial torpedo, stamped, machined, and welded completely by women; Stokes bombs, aerial bombs, and Mills' hand

grenades made by them throughout, the limit of accuracy of the spun detonator in the Stokes bomb being .001 in.; a vaneless rifle grenade made completely by women, parts of it to a limit of .001 in.; and a considerable number of pressings for detonator tubes, phosphor bombs, etc.

**WAR-TIME FACTORY BUILDING**

This building is designed to give a semi-basement floor, with particularly cool storage on the lower floor. The upper floors are designed for storage purposes, and are also arranged to take light machinery if required. All the structural work is of reinforced concrete, the floors being paved with metallic paving. The roof is constructed of wood principals, with reinforced concrete ties at every second truss, and roof boarding covered with mineral rock asphalt. The glazing is formed of lead-covered steel bars to the roof and of concrete bars to the walls. Lifts will be arranged to travel to each floor, and there is an external staircase.



A WAR-TIME FACTORY BUILDING. A. ALBAN H. SCOTT, ARCHITECT.



## PREHISTORIC CAMPS AND FORTIFICATIONS.

At the last meeting of the Historical Association for this session, at Bristol University, a lecture was delivered by Professor Lloyd-Morgan, LL.D., F.R.S., on "Prehistoric Remains in the Neighbourhood of Bristol."

Professor Lloyd-Morgan began his lecture with a passing reference to the Roman road running across the Downs, to the Wansdyke, the western origin of which may be at Stokeleigh Camp, to the dolmens at Stoke Bishop, and to the barrows on the Mendips, of which the round ones are British and the long ones pre-Aryan, and then described in more detail the camps on each side of the Avon. The three camps—that on Observatory Hill, the Burwalls Camp, and the Stokeleigh Camp—are all pre-Roman, but may have been occupied by later invaders. There is little evidence of definite construction in the camp on Observatory Hill; traces of a mortar-like substance have been found, but this may only be calcined limestone due to camp fires. The Burwalls Camp has practically disappeared, though on the Nightingale Valley side a small mound remains, the core of which contains smashed limestone and charcoal; there is, however, not sufficient evidence to show whether the whole camp wall was built with this central hearting; if it were, the camp was built on a different principle from the others.

The wall of the Stokeleigh Camp has been examined in various places, and is of the type known as dry-walling. No mortar is used, and the stones are laid in courses. On the Nightingale Valley side these stones are more massive; these are the foundation stones. The width of the base of the wall was about five feet. Evidences of a different construction of camp walls are found in the Worlebury Camp, where a series of smooth facings are found, with rubble walls against them—a kind of wall which would increase the difficulties of attack. Differences such as these may mark differences in the tribes that built the camps. The pits in Worlebury Camp are probably later than the original construction of the camp and have given evidence of occupation at different periods.

Leaving the camps, Professor Lloyd-Morgan gave an account of the stone circles at Stanton Drew, which are much earlier in construction, and probably may be dated about 2500 B.C. The stones composing the circles were all brought from a distance, probably from Harptree. The great circle consists of thirty stones, and on the eastern side there is a stone avenue; a smaller circle of eight stones lies to the north-east and another of twelve to the south-west. There are isolated stones towards the north and west, known respectively as the Quoit and the Cove. A line drawn from the Cove to the north-east circle passes almost through the centre of the great circle, where it crosses another drawn from the Quoit to the south-west circle. An observer standing at the centre of the great circle about May 8 or 9 would see the sun rising along the lower line of the avenue, and if on Midsummer Day he stood at the Cove, and looked to the north-east circle, he would see the sun rise along that line. The possible explanation of the circles is therefore that they were built originally as a temple for the cult of the May-November year, and that an addition to them was made when the later cult of the June-

December year was adopted. They thus show the history of a change of cult, and date from pre-Aryan or Iberian times, for in Africa the same use of the Orientation in connection with leading stars has been found.

## THE DUNDEE HOUSING MODEL.

During ten days 19,603 persons visited the model of the proposed dwelling-house to be erected by Dundee Town Council. Mr. James Thomson, the city engineer, has submitted a report to the Dundee Housing and Town Planning Committee, in which he stated that the expenditure incurred in the erection of the model was justified, as had been fully confirmed by the record of the number of visitors; by the number of those who had indicated their desire to obtain houses, by the advantage taken of the opportunities for criticism, and by the many practical suggestions made by probable tenants. During ten days from May 19 to May 28, both inclusive, 19,603 persons visited the model, and the number who had already intimated their desire to obtain houses was 132, which was equal to fully one-fourth of the total number of houses proposed under both schemes at Stirling Park and Logie, and this notwithstanding that members of the committee had not yet explained the schemes at ward meetings of the working class citizens as was proposed. A variety of written criticisms was received on cards provided for the purpose. Most of these had reference to minor matters, all of which could be quite well dealt with should the permanent buildings be proceeded with.

The points on which there appeared to be the greatest divergence of opinion related to the method of reaching the bedroom, etc., through the living-room instead of by a separate lobby, and as to the provision or non-provision of a bath within each house. The best answer to these objections was the number of applications which have been made by willing tenants for houses as designed and reproduced in the model, but it might be well to keep an open mind on that part of the scheme until the members of the committee had had their meetings in the wards; and, meantime, it might be explained that, if lobby space and separate entrance to bedroom were provided as suggested and the size of living-room not reduced, the additional first cost owing to enlarged area would involve an increase of fully 6d. to the weekly rent.

In conclusion, he added that it would be vain to attempt to satisfy the demands of all intending tenants. The opinion of the majority must prevail, and in the meantime questions of detail might be safely left over until the policy had been decided. As to the demand for the houses there need be no doubt, the number and enthusiasm of visitors and the number of applications for houses testifying to the fact.

Mr. A. W. Paton, the convener, suggested that the councillors should hold meetings in their different wards with the idea of obtaining the opinion of the citizens on the scheme, but it was pointed out that the Council had not yet committed itself to the scheme.

Mr. William Anderson suggested that the City Engineer should prepare plans embodying the suggestions contained in the criticism of the various visitors to the model.

Mr. Thomson stated that this was being done, and these amended plans would be submitted to the committee.

## NORTH WALES HEROES MEMORIAL.

A meeting representative of all the public bodies in Wrexham and East Denbighshire has been held at the Guildhall, Wrexham, to stimulate interest in the movement initiated by Mr. R. J. Thomas, of Holyhead, to commemorate the men of North Wales who have fallen in the war by erecting new science buildings in connection with the University College of North Wales, Bangor. Mr. R. J. Thomas opened the fund with a subscription of £20,000, and is giving his whole time and energy to the campaign as honorary secretary. An executive committee representative of each county in North Wales and of London, Liverpool, and Manchester has been appointed, and the meeting at Wrexham was one of a series of county meetings called with the object of inaugurating a movement to raise £20,000 towards the scheme as a county contribution. Of this sum East Denbighshire is expected to raise £10,000.

The Mayor, Councillor Rowland, who presided, briefly outlined the object of the meeting, observing it might be said that there were other war memorials already started, and that it was a pity to divide forces. A movement was now on foot to build a new infirmary at Wrexham as a war memorial. No one would dispute the fact that such an infirmary was urgently required for Wrexham and their industrial district around. They must have a new infirmary; it was absolutely necessary, but he did not know that it was necessary to call it a war memorial. They would have to have a new infirmary without any reference to the war. If the committee interested in promoting the new infirmary scheme could not see their way to do otherwise than retain it as a memorial he thought they would be all agreed that there must not be any antagonism between the two movements, which were both entitled to their goodwill and support.

Lord Kenyon, chairman of the Executive Committee of the North Wales Heroes Memorial, after alluding to the link between Wrexham and Bangor College formed by the boys and girls who went to Bangor for their university training, said in 1900 they came to the conclusion that the university buildings were insufficient, and £116,000 was raised to obtain new ones. They built the arts block, the library and museum blocks, and the great hall, with all the lecture rooms, and then they were compelled to stop through lack of funds. The science buildings could not be erected, and they had to continue the work in the old posting house at Bangor, where it was begun in 1884. The accommodation was probably inadequate, and it was now proposed, as a memorial to the men of North Wales who had fallen in the war, to establish a new science building, and to make provision for the best possible training in agriculture, mining, geology, and all the other kindred ologies.

A resolution was adopted pledging the meeting to do all in its power to support the memorial. An executive committee was appointed with Lord Kenyon as chairman, the Mayor as vice-chairman, Mr. W. T. Skene as hon. treasurer, and Mr. T. Robbins as secretary. It was announced that meetings would be held in every part of the district in the near future.

[A letter on this subject appears on p. 275.]



## TEMPORARY MUNITION PLANT.

A type of munition factory that is being erected throughout Canada for the manufacture of shells is described here rather as a matter of curious interest than as an example for imitation. This plant was intended as a purely temporary factory for munition work, to serve during the war. The city bye-laws would ordinarily prohibit the erection of factories of this type, but the urgency of the situation has caused the stringency of the bye-laws to be reduced temporarily, provided that the buildings are either removed or converted to permanent factories after the war.

This particular factory is built of wood, and in its design every consideration was taken of the fire risk. It is a single-storey structure, measuring about 289 ft. by 190 ft., with a projecting wing on one corner, 67 ft. by 56 ft. The cross-section shows a large ventilating monitor and two triangular-section skylights. The columns are 10 by 10 timbers, carried on 2 ft. sq. concrete piers, carried 2 ft. 6 in. to 3 ft. 6 in. below grade. The columns are spaced 14 ft. in one direction and 19 ft. in the other. The roof is carried on trusses built up of 6 by 6, 8 by 8, and 8 by 10 timbers. They are spaced at 14 ft. centres, and have spans of 19 ft., except the monitor trusses, which span 38 ft., no intermediate columns being used.

The purlins are 4 by 8 timbers, spaced at 4 to 5 ft. centres, covered with  $1\frac{3}{4}$ -in. sheeting and ready-roofing. The walls are composed of  $\frac{7}{8}$ -in. T. and G. sheeting, covered with building paper and ready-roofing, fastened with cleats. Three-inch yellow pine planks, laid on 4 by 6 B.C. cedar sleepers, bedded in a 4-in. cinder fill, form the floor.

A shipping building of similar construction is built alongside the factory, with a crane runway 371 ft. long, the crane having a 19-ft. 2-in. spread. Between the existing and the new factories there is a fire-wall, a similar wall separating the boiler-room. At 125 h.p. boiler provides steam for indirect heating through fans and ducts located near the roof. The machine power is electric.

## WAR MEMORIALS IN YORK MINSTER.

In our issue of May 30, Editorial comment was made on the memorandum issued by the Dean and Chapter of York Minster with respect to war memorials. As the memorandum has excited considerable attention we here reproduce it:—

It is most natural that in these sad days of bereavement and loss, lit up as they are by daily deeds of splendid courage and heroism, numbers of parents and friends of those who fall in battle should desire some memorial to be erected in the Minster whenever it is possible to show any claim to that great distinction. It is obvious that this raises questions of a serious nature and of great difficulty, as well as situations of considerable delicacy. On the one hand there is the desire to meet with every effort of sympathy the wishes of the bereaved. On the other hand there are plain facts to be faced, as:—

1. The Minster walls have already been so generally utilised for the erection of monuments and tablets that there is comparatively little space left, and this must be jealously safeguarded and conserved.

2. In so glorious a church nothing but the very best that contemporary art can

produce should be allowed, and this means that any worthy monument will be very costly.

3. Intensely interesting as the individual heroic acts of our men at the Front are to ourselves and to the present generation, it is doubtful whether anything should be publicly commemorated in the Minster which is not of sufficient importance to deserve and to evoke permanent and national interest.

4. The Minster is not only the pride of the city of York and the cathedral of the diocese, but it is also the metropolitan church of the Northern Province and a great national treasure house, and therefore something far more than mere local connection with the Minster would seem to be required before a proposal to make a permanent commemoration within its walls is made.

5. The war is not yet at an end, and it is obviously unwise to be filling up space piecemeal before we are in a position to take a comprehensive view of what will be required by way of commemoration of the thousands of officers and men of the North who have given their lives for their country. The Dean and Chapter are therefore not prepared as a rule to come to any decision about mural tablets or monuments till the war is over.

In view of these considerations and facts the Dean and Chapter have laid down certain regulations which will be available for the guidance of those who may be contemplating the proposal of memorials.

## DERWENT VALLEY WATER.

A somewhat serious situation has arisen in regard to the Derwent Valley water supply. The Water Committee of the Nottingham City Council report that a notice has been received by the Derwent Valley Water Board from the Corporation of Sheffield to construct works sufficient to provide the total remaining quantity of water to which the corporation is still entitled.

In considering this application the Derwent Valley Water Board have asked that they may be informed whether the Nottingham Corporation can spare any of the water to which they are entitled from the board's works, which might be offered to the Sheffield Corporation for the ensuing twenty years, and, if the corporation cannot spare any of such water, but, on the other hand, may require a further instalment, the board should be furnished with particulars within a reasonable time of the Nottingham requirements, so that any new works which may be undertaken for the Sheffield demand may be so designed as to suit the requirements of Nottingham.

The matter has been fully and carefully considered, and the Nottingham Committee have had a full report from the water engineer. In view of the continually increasing demand for water from the city and the surrounding area within the limits of the water undertaking, it is estimated that the yield from the sources from which the water supply is now obtained, including the existing supply from the Derwent, will only be sufficient at the end of ten years from the present time to meet the normal demand at that date, and that, unless additional supplies are obtained, the present resources would be insufficient to meet the anticipated demands.

Under these circumstances the committee propose to reply that the Corporation cannot spare any of the remaining water to which they are entitled from the

Derwent Valley Waterworks, and that the further instalment to which they are entitled should be provided within the next ten years, and that the Board be therefore furnished with particulars as soon as possible of the quantity required, and at what date the corporation will require that supply.

## THE STUDY OF ART.

Referring to a letter published in "The Times" of May 30, in which Sir T. G. Jackson brings a heavy indictment against art critics, Professor P. Gardner, of Oxford, in the course of a long letter in "The Times Educational Supplement" of June 11, declares that art criticism in England is at a low ebb, and has not, as it ought to have, saved us from the monstrous invasion by futurists and post-impressionists and other prophets of Babel. But I venture to suggest, he says, that it might be possible, instead of exterminating the critics, to try to improve the breed.

The view that artists are the best judges of works of art is contrary to experience. Every critic should, indeed, have practised some branch of art; but it is not the case that the most successful artists are most trustworthy as critics. In fact, the contrary has been a commonplace since the days of Plato.

Other writers maintain that the public taste needs no guidance, but can decide by likes and dislikes what is artistically good. This is a worse view than the other. The man in the street judges of works of art by two criteria—sentiment and fashion. Either of these criteria may lead him to admire what is very poor or very bad in principle.

But whether or not the principles of art can be taught, the history of art certainly can be. Some knowledge of that history is in most countries regarded as a part of a good education. While few countries are fuller of excellent works of art than England, yet there are few countries where knowledge in regard to such works is less widely spread or less earnestly pursued. Boards of historical studies throughout the country have almost invariably boycotted this particular branch of history. At Oxford they have notably done so. Knowledge of the history of art will not of itself enable one to produce masterpieces, but it may well prevent one from either producing or admiring abominations.

The mischief, and the root of much mischief, is that in England men take to art criticism often, though of course not always, without sufficient training. An artist who has failed, or a newspaper writer who has no speciality, will turn to this branch of journalism as a resource. He will pick up superficial knowledge by talking to dealers and artists, and never reach a reasoned outlook in his subject. In this matter, as in all others, training and trouble are necessary. It is as necessary to study the history of art and the principles of art as it is to acquire some knowledge of technique. . . . While Oxford has given an admirable education in classics, in literature, in science, she has almost entirely avoided the whole world of art, as not her business. At last there has come to her some sense of sin in this matter. The question of setting up a board or committee to take up art-teaching is before the university. A battle royal is coming on between the votaries of the Humanities and the votaries of natural science. But the latter do not usually object to the study of art. . . .



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

JUNE 20, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1172.

A HEARTY welcome will be extended to the newly formed Institute of Scottish Architects, which has just held in Edinburgh its first annual convention. Those who have wondered why Scotland should have been so laggard in this matter will be somewhat reassured by the statement that an Architectural Institute was founded in Scotland in 1850. That it lasted rather less than a score of years is perhaps explicable on the ground that it was not a purely professional body. Of its first list of 170 members only thirty-three were architects, and its activities seemed mainly confined to the collection of topographical records. Societies so constituted are not remarkable for longevity, and may be said to contain within themselves from the outset the elements of disruption—a word of might in Scotland, where, according to the ancient jest, there are not only frequent splits, but split splits, and split splitted splits. From that fate we trust that the new Institute will be always immune. It has in it all the elements of stability. Its first president, Sir Rowand Anderson, was an ideal selection; and he could have had no more worthy successor than Sir John J. Burnet. With a decidedly strong council, and with the benediction of the R.I.B.A., the Scottish Institute makes a most auspicious commencement, and we very cordially wish it all possible success.

\* \* \* \*

Sir Rowand Anderson, in his address at the first convention of the Institute, was, on the whole, admirably safe and sound in his summary of the leading principles that should, and doubtless will, guide the Institute. He advised that it should interest itself in the housing question; and he was no doubt entirely right in insisting that very little progress in it can be made until the prior problem of providing cheap land is equitably solved. Scotland, as we have found previous occasions to note, is changing its attitude towards housing; and in advocating the abolition of the block system Sir Rowand was taking the right pathway towards reform. On architectural training, also, he took the true line. "Nothing quickens the intelligence and interests one so much," he said, "as getting into contact with good work of the time when architecture was the result of evolution and tradition, and not of a fashion dependent largely on the fleeting literary influence of the day." It is in the distinction between permanent and merely temporary values that the neophyte is most in need of guidance. Again, "Education is wanted of a practical kind in all work connected with building—not the education of mere drawing and skill in reproducing (and, as we see everywhere, misapplying), but critical and analytical teaching that will bring home to the student the origin, the nature and development and uses of all ancient work in every department, along with a sound knowledge of all mechanical and natural laws, so as to ensure health, stability, and economy." When, however, Sir Rowand disputes the proposition "that fitness and adaptation occasion only satisfaction, and not the higher pleasure arising from beauty," and is inclined to rank machines of precision as works of art, we fear that he merely confuses the issue by adopting terminology that is too flexible and accommodating to be of the slightest use. We cannot afford to lose thus lightly the means of discriminating between a Raphael and a railway

locomotive. It is essentially true, no doubt, that a nice adaptation of form to function is always admirable, but it does not always excite in us the same kind of emotion as that awakened by a fine picture, or statue, or building; and, the appeal being different, the terminology should vary accordingly. Sir Rowand, however, insists that "architecture must cease to follow . . . the absurd distinction of fine art from that which is useful or mechanical." This revives an old controversy that cannot be profitably pursued; but we are unable to agree that useful distinctions are absurd.

\* \* \* \*

During the air raids on London last week the behaviour of the people was splendid. In the schools and colleges especially the conduct of teachers and pupils showed them akin to the heroes and heroines who have faced death so intrepidly on our torpedoed ships. While the taubes were filling the air with their horrid din, and the anti-aircraft guns were roaring, professors at some of the colleges for women calmly went on with their lectures. Children at the schools marched in drill order to the basements, and in several instances sang songs as a massed choir. In one instance young boys were reading aloud, in turns, "Tom Brown's Schooldays," when shrapnel fell in the playground. The boy who was reading finished his passage without faltering, and the boy who followed him took up the cue as coolly as if bombardment of the school were an ordinary and a negligible incident. Even where a bomb dropped into the midst of a class, killing one and injuring others, there was no panic, and discipline was maintained. This is all very admirable; but it is hardly possible to avoid speculation as to whether, and to what extent, dangers from enemy aircraft will be taken into account in designing the schools of the future. If it is impracticable to provide bomb-proof roofs, it might be possible to construct inexpensive but effective shelters, consisting mainly, perhaps, of sandbags. The children have been so well drilled with respect to fire alarm that there seems to be no difficulty in removing them quickly from the upper rooms, even where the staircases are narrow and tortuous. None of the London schools, however, so far as we are aware, is provided with external escape staircases, such as the Council rigorously insists upon for industrial buildings. They would not improve the appearance of the schools, but they would appear to be as necessary for them as for any other kind of building in which large numbers of persons are assembled; and they would discount the retort, "Physician, heal thyself."

\* \* \* \*

Whether a professional man who, in time of peace, collects university distinctions as ardently as some men collect butterflies can be truthfully said to grow "small by degrees and beautifully less," as the venerable misquotation has it, is a nice question. University standing, nevertheless, is popularly held to be a thing to be desired, and those who affect scorn for it are mostly those who for one reason or another, have been unable to attain to it. London University, it is announced, is about to confer degrees in estate management—or rather, as we gather, it will include this subject in its examinations for the degree of Bachelor of Science, which already



include veterinary science, economics, agriculture, engineering, mining, metallurgy, and horticulture. Details of the new curriculum are not yet available, but it is conjectured that it will include land surveying, estate accounting, town planning, the development of building estates, the valuation of land, taxation, rating and tithes, building construction, forestry, agricultural law, municipal and local government law, and urban public sanitation—a wide enough range, in all conscience; but, of course, this list merely delimitates the field of choice. It is not to be supposed, for instance, that the student who takes building construction will, as a rule, add forestry to his course, nor agricultural law. He might be expected, however, to take up the development of building estates, town-planning, and municipal and local government law, with perhaps a little land surveying; but the grouping of the subjects into courses will be a delicate task for the university authorities, and we suggest that before entering upon it they should confer with the R.I.B.A., the Society of Architects, the Institute of Builders, and the National Federation of Building Trades Employers.

This forward movement on the part of London University is to be welcomed for many reasons. It is an official recognition of the dignity of business and of the importance of scientific training in that and in technology. It enlarges the vista of the aspiring student, and gives him a definite and an attractive goal at the end of it. It should give direction and some degree of uniformity to the institutions that "work up" to the degree. There is, of course, the danger that it may give an unfair preference to those possessing a degree, as against those whom accident excludes from it; but the coming educational reform will be lamentably short of completeness if it does not enlarge the opportunities of able students who in present circumstances may be shut out from the higher education. But the chief advantage of a degree is, after all, the value of the training of which it is the hallmark. A London University degree may not imply extraordinary intelligence, but it certainly does imply energy, determination, and grit—qualities that are of the utmost value in the practical application of the knowledge acquired, and (in spite of what cynics may say) not invariably exhausted in the effort to get the degree. The new curriculum may possibly attract architectural students whose bent is in the direction of town-planning and surveying; but it should not bar the way to a purely architectural degree. Any arrangement for the establishment of that further faculty will doubtless be made in consultation with the existing architectural schools.

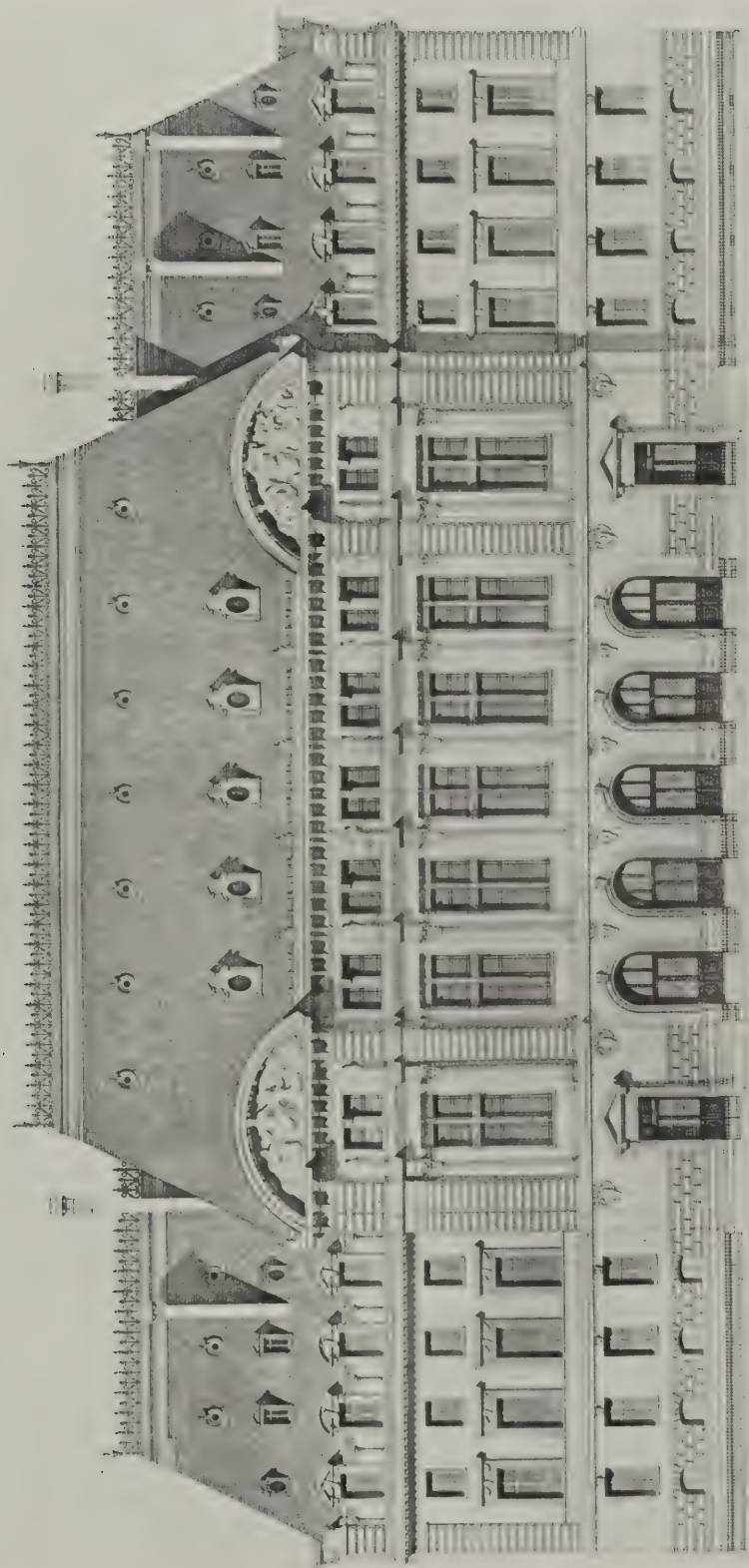
Last Thursday the House of Lords passed the second reading of the Bill empowering the South-eastern and Chatham Railway Company to strengthen the Charing Cross bridge at a cost of £167,000. Fifty-three noble lords voted for the Bill, and nineteen against it. No more favourable result was to be expected. Viscount Chilton, in moving the second reading, argued in the strain in which we are already too familiar; nor was there anything very fresh in the pleadings of the opposition, which, however, was very ably conducted by the Earl of Plymouth, the Marquis of Crewe, Earl Curzon, and Lord Courtney. The Earl of Plymouth thought it was not too much to ask the company to hold their hands for two years after the war, to enable persons who were deeply interested in this subject to arrange a scheme for the improvement of London at this spot. He meant, of course, that time was required, not to devise a scheme, but to raise the necessary funds and to obtain the necessary authority for putting it into execution. An argument that has had more weight than its intrinsic value warrants is

that the opposition should and would have been ready long ago with its plans and its money for the replanning which it urges as an alternative to the bolstering up of this ugly and decayed old bridge. There can be but little sincerity in such a contention, for those who put it forward must know right well how difficult it is, and how long a time it takes, to overcome the inveterate apathy upon which they have somewhat cynically relied for their present inglorious success.

Lord Chilton "understood the travelling public were in favour of the Bill," and much stress has been laid on the support it has received from a few fruit-growers in Kent, who, in their anxiety to preserve Charing Cross Station as a convenient nexus between Canterbury and Covent Garden, seemed to have suddenly condoned the offences of which hitherto they had been wont to accuse the railway. Neither the "travelling public" (Lord Chilton forgot to say how microscopic a fragment of it—relatively speaking—has any use for the Charing Cross bridge) nor a self-interested minority of the Kent fruitgrowers can have any right whatever to inflict on London a disfigurement that would not be tolerated in any other city in Europe. Nor is it merely a question for Londoners. Lord Curzon, in the course of what was by far the most able speech in the debate, made this issue too narrow. "In the process of his life," he said, "he had acquired an affection for London, and his pride of London had grown greater as he had grown older." He contended that "the matter should be considered from the point of view of all the inhabitants of the metropolis." That, however, does not bring London into quite the right focus as the capital of Empire. We wish to avoid talking grandiosely about it, and will therefore simply say that as the metropolis of England and the seat of Government London ought to be at least made tidy. It is somewhat disheartening to find Parliament failing so lamentably to grasp this very elementary proposition.

Of the R.I.B.A. elections there is but little to be said. Contentious issues being taboo, it is rather strange to find that of the newly elected members of council nearly one-half were not on the old. In no other sense can they be described as new men, for, almost without exception, they have been active in the affairs of the Institute, and all are well known by their professional works. Not one of them is open to the comment on the fly in amber. On the other hand, the eighteen good men and true who were not elected would have made a council only a little less strong than that which has been chosen. Very possibly some of them were the victims of the "over-confidence" of electors. If a goodly number of voters think "A is perfectly safe, I will therefore vote for others whose chances are more dubious," A is apt to go down, while far less popular candidates are elected, to the general surprise and chagrin. Of course these little accidents could be avoided by the adoption of the referendum system, which, however, seems alien to our soil. Mr. Ernest Newton, the retiring president, has had an unenviable period of office, in which he has had to face conditions that in normal times lie quite outside the president's sphere. He gets, we fear, too little credit for the enormous amount of work he has done, because much of it, being of a confidential character, is unrevealed. Moreover, the times have denied him the pleasant interludes, the joyous social functions, that, in a period of peace, may possibly increase the president's burden, but certainly make it more tolerable. Later it may be realised more clearly, we hope, how ably, discreetly, and effectively he has discharged his trust in circumstances of unparalleled delicacy and difficulty. Mr. H. T. Hare will find it no easy or "cushy" task to "carry on."





MODERN FRENCH ARCHITECTURE. III.—THE SORBONNE, PARIS: FAÇADE TO RUE DES ÉCOLES.  
HENRI PAUL NÉNOT. ARCHITECT.







MODERN FRENCH ARCHITECTURE. IV.—THE SORBONNE, PARIS: GRAND STAIRCASE.

HENRI PAUL NÉNOT, ARCHITECT.







MODERN FRENCH ARCHITECTURE. V.—THE SORBONNE, PARIS; GRAND AUDITORIUM.

HENRI PAUL NÉNOT. ARCHITECT.







MODERN FRENCH ARCHITECTURE. VI.—ENTRANCE TO BANK, RUE LAFITTE AND PILLET-WILL, PARIS.

HENRI PAUL NÉNOT, ARCHITECT.







MODERN FRENCH ARCHITECTURE. I.—PREMISES OF THE COMPAGNIE GÉNÉRALE  
TRANSATLANTIQUE, RUE AUBER, PARIS. H. P. NÉNOT, ARCHITECT.







MODERN FRENCH ARCHITECTURE. II.—THE SORBONNE, PARIS: DETAIL OF PRINCIPAL FAÇADE.  
H. P. NÉNOT, ARCHITECT.





## HERE AND THERE.

JUNE temperature being phenomenally high for this "sweet o' the year," one's thoughts naturally turn towards heating apparatus. When he was editing the "Magazine of Art," championing Rodin, fighting the Philistines, and otherwise having a pretty hot time of it, William Ernest Henley put forth a "Ballade Made in the Hot Weather," which begins:—

"Fountains that frisk and sprinkle  
The moss they overspill;  
Grass that the breezes crinkle;  
The wheel beside the mill,  
With its wet weedy frill;  
Wind-shadows in the wheat;  
A water-cart in the street;  
The fringe of foam that girds  
An islet's ferneries;  
A green sky's minor thirds—  
To live, I think of these."

Rodin repaid Henley with as fine a bust as any that is hidden in the cool and shady crypt of St. Paul's. To live, the hot-water engineer thinks of the opposites of Henley's ingenious catalogue of objects that foster "a green thought in a green shade." As the heating engineer is scarce he will have plenty to do, and had better begin early—"do it now." Already the prudent householder is laying in his winter stock of coals.

By the way, one of the greenest thoughts that I have lately observed is that which inspired the nullification and undoing of two lovely, refreshing little grass-plats in front of one of our new Government offices. Ruskin, who, in his "Poetry of Architecture," strongly asserted the entire compatibility of art and nature, and drew some wonderfully weird diagrams to prove it—e.g., an ogee curve to show how lovingly the ruins of St. Anthony's Chapel are received into the bosom of an Edinburgh hill—would have delighted, I imagine—but you never can tell what Ruskin would love or hate, so much depending on the state of his digestive apparatus—in those two little splashes of emerald, which soften one's approach to stony-hearted officials, who should themselves carry a green thought to their cabinets. Do you "see any green" in their eyes? They have warned us very effectually against cherishing any such vain illusion. They have destroyed our hopes with iron hoops which stab the green to warn off trespassers. These, however, are only a hint. As if these wounds were not absolutely fatal to the dulcifying effect of the grass-plats, ugly iron tablets, coldly requesting us, in villainous lettering, to keep off the grass, are skewered in, killing amenity at four several places. It is an unlovely crop. It were better to turn the grass-plats into potato patches. Around the outer edge of the grass-plats there is a comely stone curb. Why not surmount it with a neat iron dwarf railing? There would then be no need for the hoops and tablets. The greensward forecourts, besides refreshing the eye, keep the stonework well away from maltreatment by mischievous persons who strike matches on it, scribble ribaldry on it, or even hack at it with knives or bludgeon it with blunt instruments, and who never seem to get caught in the act.

To return to the heating engineer. There is perhaps not much poetry in him. His one and only effort that has come to my observation consists of a single minatory couplet which he attaches to a radiant radiator or a gilded geyser—

"I am hot—  
Touch me not."

The heating engineer is essentially a practical-minded man, even when he bursts into poetry. If ever he

grows ambitious of the bays, he must remember that one most appropriate title for his volume of verse—"With Pipe and Lute"—has been already adopted. (Do heating engineers joint their pipes with lute?) This contingency I regard as by no means remote. I know of at least one book on heating that, even if I am forbidden to describe it as a "great prose epic," I must still venerate as a very respectable contribution to real literature. It has a tremendous title—"On the History and Art of Warming and Ventilating Rooms and Buildings by Open Fires, Hypocausts, German, Dutch, Russian, and Swedish Stoves, Steam, Hot Water, Heated Air, Heat of Animals, and Other Methods; With Notices of the Progress of Personal and Fireside Comfort, and of the Management of Fuel. Illustrated by Two Hundred and Forty Figures of Apparatus. By Walter Bernan, Civil Engineer." As this comprehensive work was published in 1845, I am afraid it is out of print, which is a pity, because it is full-fraught with varied interest, the rich promise of its yard-long title being faithfully and amply fulfilled. It is almost as fascinating a book as Buckle's "History of Civilisation"; and are not civilisation and heating coeval and inseparable?

From this fine confused feeding I should like to select many tit-bits. One must suffice for the present occasion: "With the heat copiously emitted from the bodies of animals was formed perhaps the first artificial climate. The convenience and economy of this ancient method keeps it still in use; and notwithstanding the advance in refinement, it adds to the comfort of numbers, even in La Belle France itself. In Normandy, where the cold is severe, and the firing expensive, the lacemakers, to keep themselves warm and save fuel, agree with some farmer who has cows in winter quarters to be allowed to carry on their operations in the society of the milky mothers. The cows are tethered in a row on one side of the apartment, and the lacemakers sit cross-legged on the ground on the other side, with their feet buried in straw." Do not forget, I beg, that this was written seventy-two years ago.

Is there anything substantial, I wonder, in any of the recent suggestions as to substitutes for coal? There are, as we know, sunbeams in cucumbers; and gold is present in almost everything, but in such minute quantities as to render its segregation unprofitable. It has been said that in every brick there is a pennyworth of gold, but I take this to be a "coney-catching" jest of the same order that tells us "London streets are paved with gold," the explication being that you cannot pave them without it; and in every loaf of bread there is almost sufficient alcohol—could it but be extracted—to render an able-bodied blue-bottle fly unaccountable for his actions. Likewise it is now being averred—perhaps with more freedom than exactitude—that a tremendous number of substances could be converted into fuel, if only we knew how to do it. Portland cement, I think, is one that has been mentioned. You have only to put sufficient pressure on it to make it burst into flames. You may even extract all sorts of promises (about housing, for example) from an obdurate Government, if only you can bring sufficient pressure to bear on it. But we are not yet in a position to compel old King Coal to abdicate, although we constantly give him the sack. But possibly Professor Ramsay's suggestion of enticing him out of his hole in the form of gas may solve the awkward question of cartage.

DIOGENES.

## M. HENRI PAUL NÉNOT, ROYAL GOLD MEDALLIST, 1917.

ON Monday next, June 25, the Royal Gold Medal will be ceremonially presented to M. Henri Paul Nénot, Membre de l'Institut. He is the twelfth representative of France to win this distinction; the others being—J. I. Hittorff, 1855; J. B. Lesueur, 1861; E. Viollet-le-Duc, 1864; Charles Texier, 1867; Joseph Louis Duc, 1876; the Marquis

for more than sixty years constant and abiding. M. Nénot receives the medal because he richly deserves it, and not because the Institute desires to pay a compliment to our French Allies. That this compliment happens to be included is a lucky accident.

M. Henri Paul Nénot was born in Paris on May 27, 1853. At the age of nine he was sent to school at



*H. Nénot*

de Vogüé, 1879; Charles Garnier, 1886; César Daly, 1892; Auguste Choisy, 1904; Honoré Daumet, 1908; Jean Louis Pascal, 1914. As no other foreign country appears more than four times in the list of Royal Gold Medallists, it is a tolerably fair inference that, whether from the proximity of France, or from whatever cause, French architecture excites in this country more interest and admiration than that current in any other foreign nation. But the list proves more conclusively that this admiration is no mushroom growth of the *entente cordiale* of to-day, but has been

Villiers-le-Bel, and it is said that on entering it he at once showed his bent towards architecture by drawing an excellent plan of the premises. His fondness for science and art, and his coldness towards the Latin grammar, decided his career. At the age of thirteen, he was taken from school and introduced to the atelier of M. Lequeux, architect of the department of the Seine, who had never before received so young a pupil, and who, discerning his talent, kept in touch with him after the atelier was dissolved, and gave him not only excellent technical instruction, but much



fatherly advice. Nénot, when only fifteen, entered the Ecole des Beaux-Arts, and, at the end of his first year, received the Muller-Schœné prize as the most successful student of his year in the "deuxième" class. His patriotism, however, was even a stronger passion than his love of architecture. On the declaration of war in 1870, he joined the franc-tireurs, and fought so gallantly that, at the age of eighteen, he received the Military Medal. At the end of the war, Nénot continued for some time to wear his military uniform, less because he was proud of it than because he was for the moment too poor to buy civilian clothes. He has no need to redden at the reminiscence. It is all the more to his honour that "chill penury" did not "repress his noble worth," and that he has achieved fame and wealth without adventitious aid of any kind. He has been the architect of his own fortune, as well as of some of the finest of modern French buildings. In 1873 he again volunteered for military service, joining the 30th regiment of artillery. At the expiration of his term he wished to re-join, and it required all the persuasive powers of his old masters to recall him to the Beaux-Arts School.

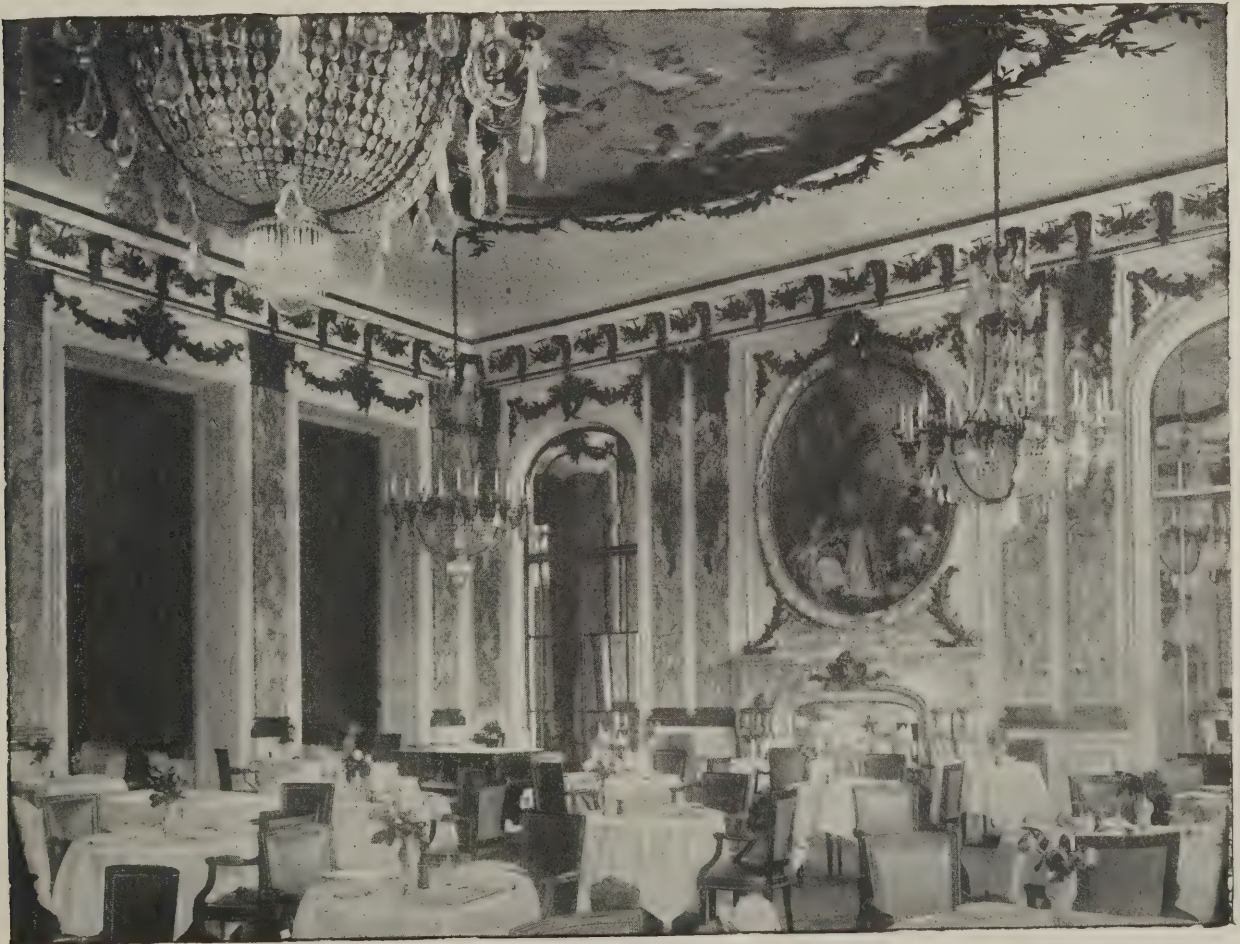
From the atelier of M. Lequeux he passed to that of M. Questel, who, a pupil of Vincent, Blouet, and Duban, was one of the most prolific of the architects of the third Empire, restoring the Amphitheatre at Arles, and the Pont du Garde, and designing the church of St. Paul and the fountain at Nîmes, the Prefecture and the Museum at Grenoble, the Hospice de Gisors, the asylum for the insane in Paris, and a number of other notable buildings. In the letter of introduction that Nénot carried to Questel, Lequeux wrote, "It is a future Grand Prix de Rome I am sending you." And it was so. Obligated to find means of subsistence while at the Beaux-Arts, Nénot worked in the office of

Charles Garnier, Grand Prix, and winner of the competition for the Opera House; his project being unanimously chosen as the best of 170 sets of competitive designs. It is perhaps a pardonable digression to recall that during the war the unfinished Opera House was used as a granary.

In 1875, Nénot thought he would try his luck in a competition. In collaboration with his friend Oudiné, son of the famous engraver of medals, he entered the competition for an école normale and a collège communal arranged by the municipality of Huy, in Belgium. The young students won it, and were entrusted with the supervision of the work.

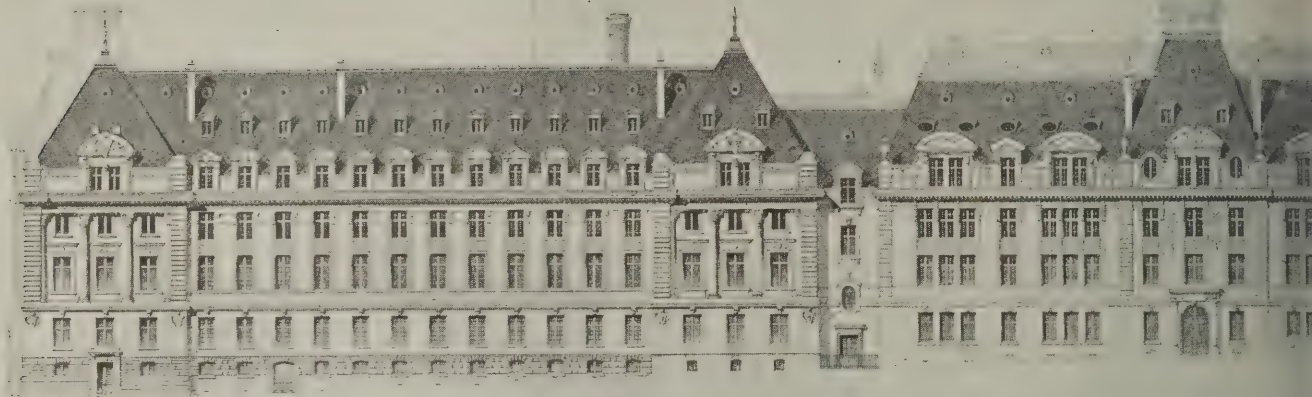
In 1877 Nénot fulfilled the prophecy of Lequeux by winning (with an exceptionally brilliant design for an "Athenée") the Prix de Rome, and went off to the Villa Médicis, of which the director was M. Lenepveu, possibly a descendant of that "honnête homme Pierre Nepveu" who, in the sixteenth century, was master mason to Francis the First, and built for him the fine staircase at the Château of Chambord. Names have a habit of recurring in the annals of art; and the Charles Texier who received the Royal Gold Medal in 1867 may have inherited the blood as well as the spirit of the Jean Texier or Letexier who worked on the north-west tower (completed in 1513) of the cathedral of Chartres, and enlarged the church of St. Aignan there by throwing an arch across the Eure to support the sacristy. While abroad, Nénot visited the architectural treasures in various parts of Italy and Greece, and went even further afield—to Constantinople, Damas, and Jerusalem, ending his journey in Egypt, in 1880.

In the last year of his tenure of the Prix de Rome, an international competition was opened for a grand monument to Victor Emanuel and Italian Unity.



HOTEL MEURICE, PARIS: GRAND DINING ROOM. HENRI PAUL NÉNOT, ARCHITECT.





THE SORBONNE, PARIS: SHOWING THE INCORPORATION OF THE OLD WORK WITH

What induced Nénot to take part in this competition is rather a piquant story. "I had," writes M. Nénot, "very little idea of going in for it. I had even, in chatting one day with some Italian artists, expressed the opinion that this competition ought to have been made purely national, since the intention was to glorify Italian unity. A very youthful architect said, with a laugh, that the result would be the same, because the Italians, being vastly superior to all the foreign artists, were bound to win the competition. This put me on my mettle, and I resolved to compete." There were two hundred and forty competitors of various nationalities, and the designs were exhibited at the beginning of 1882. Having quitted Rome before the result was announced, Nénot, "cleaned out" by the expense of his lovely tour, was in very straitened circumstances when the joyful news came that he had been awarded the prize of fifty thousand francs. The execution of the work, however, was confided to an Italian. This accession of wealth enabled M. Nénot to go on an architectural tour in France. He studied not only the beauty of buildings, but also their utility, and the experience furnished him with an equipment that made him a formidable rival in the competition for the reconstruction of the Sorbonne. The sum voted by the Chambers for this work was twenty-two million francs, and the winner of the competition was to receive twenty-five thousand francs. Twenty-eight designs were submitted, nearly all by distinguished architects, and it was recognised that ten merited premiums. By the unanimous decision of the jury of assessors, of whom M. Alphand was president, the design of M. Nénot was placed first. That was in 1882, when Nénot was twenty-nine years old. M. Alphand thought him too young and inexperienced to be entrusted with the execution of the work; but M. Charles Garnier, who had been in the same case in the competition for the Opera House, warmly advocated the appointment of his former pupil, to whom eventually the execution was confided. Before starting the work, however, and as a preliminary to it, he was sent officially to visit, in 1883, the university buildings of Germany, Austria, Belgium, and Holland.

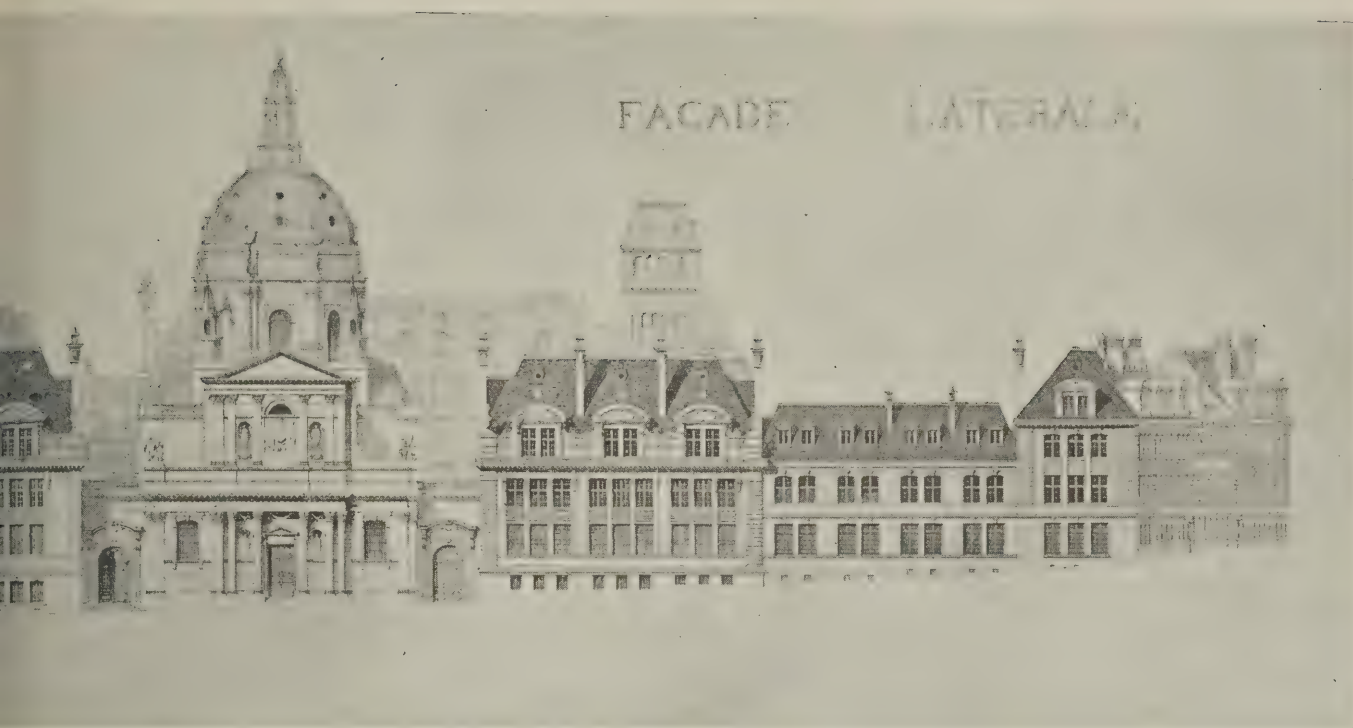
The contracts were allotted in August, 1884, and the foundations were dug in the following November. The first stone was laid on August 5, 1885, the work of construction was finished in August, 1889, and the building was completed in July, 1901. The grand amphitheatre had been inaugurated by President Carnot on August 5, 1889, but there was no further official ceremony.

A few figures will serve to indicate the magnitude of the task the young architect had undertaken. The total cost of the work was estimated at twenty-two million francs, and was not exceeded. The total area of the site was 21,000 square metres, the space occupied by buildings being less by 1,700 metres, representing the area of the principal courtyard. The four façades have a total length of 666 metres—namely, 83 metres on the Rue des Ecoles, which comprises the principal entrance; 87 metres at the rear, on the Rue Cujas; 264 metres flanking the Rue St. Jacques; and 232 facing the Rue de la Sorbonne and its extension the Rue de Victor-Cousin. The sharp slope of the side streets offered serious difficulties, the difference between level of the Rue des Ecoles and that of the Rue Cujas amounting to the height of two storeys. Such inequality is always a rather heartbreaking condition. To what extent Nénot disguised it is not adequately shown in the illustration given above, which rather exaggerates it by rendering easy a *coup d'œil* to which the actual building does not lend itself.

The new Sorbonne contains twenty-two amphitheatres, five libraries, two art museums, sixteen examination rooms, thirty-seven private rooms for the professors, and two hundred and forty laboratories. These numerous apartments serve various learned societies—the School of Charts, the Faculty of Letters, and the Faculty of Sciences, the last-named comprehending the chairs of chemistry, geology, mineralogy, physiology, and physics. The physics department alone occupies a superficial area of 9,200 square metres.

It is the Sorbonne, the strenuous work of seventeen years, that has secured for M. Nénot a permanent place in the history of French architecture. M. Louis





AND THE EFFECTS OF THE SLOPING SITE. HENRI PAUL NÉNOT, ARCHITECT.

Aigoin, to whose sketch, in "La France Contemporaine" (tome iii.: Clement Deltour et Cie., 173-5, Boulevard Murat, Paris) this notice is much indebted, claims for Nénot all the natural gifts necessary to success in the career of his choice. His wide brow reveals a fine intelligence; his broad shoulders denote a robust constitution, and his countenance, while radiating geniality, indicates an energetic temperament. The honours bestowed upon him (to which the Royal Gold Medal has now been added) include the French military medal; he is Officier de l'Instruction publique; he was named Chevalier of the Legion of Honour in 1885, Officer in 1895, and Commander in 1901. He was elected member of the Beaux-Arts Academy in 1895. He married, on November 4, 1886, Mlle. Isabelle Mathais, daughter of Ferdinand Mathias, engineer-in-chief of the Nord Railway, and has four daughters.

Concerning the Sorbonne, Mr. A. E. Richardson, F.R.I.B.A. (who is now serving with the Forces), has written, in the "A.A. Journal" of April, 1917: "M. Nénot's great opportunity as an architect came when he was appointed to remodel the old Sorbonne, which was originally built with the church of that name in 1629 by Le Mercier, it is understood at the instigation of Richelieu. The character of the old building determined the style of the additions, but this did not prevent the exclusion of modern requirements, neither did it oppose the incorporation into the new scheme of the best points of M. Nénot's Grand Prix design of 1877. The rejuvenated University not only expresses the sentiment of 1629, but it represents both in conception and detail the aspirations of the 1830 school of Louis Duc [Joseph Louis Duc was the R.I.B.A. Gold Medallist of 1876], and reflects in a marked degree the highly original detail evolved by the latter architect for the additions to the Palais de Justice facing the Place Dauphin. In this is to be seen the value of sequence in national tradition, in so far as architecture is concerned. Attention must be given to the design of the grand amphitheatre at the Sorbonne, which is the most recent, as well as the most complete, development of the D plan with public tribunes, initiated by

Gisors in the Napoleonic period for the Chambre des Pairs at the Luxembourg. M. Nénot for this work collaborated with the eminent sculptors and artists, among whom the name of Puvis de Chavannes out-stands. Both in conception and execution the new Sorbonne ranks among the noblest achievements of French building and logical development."

M. Henri Paul Nénot is the author of several important works in Paris: These, in order, comprise the Institut Océanographique, the Banque Dreyfus, the Bureaux de la Compagnie Générale Transatlantique, the Administration de la Compagnie d'Assurance, la Nationale, and the Administration de la Compagnie Internationale des Wagons-Lits.

Of the Sorbonne we show several illustrations (see plates) in the present issue, as well as a view of the Transatlantique building. The latter is a remarkably dignified treatment of a commercial theme. The framework of the window is of bronze, the two figures in the central group symbolising respectively commerce and the genius of the French Maritime Service; the decorations throughout comprising marine objects. The dolphins on the cornice are also in bronze. The whole front is an excellent vindication of "the dignity of business."

We hope that M. Nénot will find it possible to receive the medal in person—a point that is naturally in doubt, considering that in the present state of affairs the passage of the Channel is attended with considerable difficulty. If, however, he is able to come to London, the warmth of the welcome he will receive should be a full recompense for the inconveniences of the journey. That would have been the case in any circumstances. It is due to him as an artist; but he would also come to us as a worthy representative of a great and gallant nation with whom we are proud to be allied in a life-and-death struggle for the freedom which to art is as the breath of life, and in that regard he would be received with tenfold fervour. As architect, veteran soldier, and ally, he has a threefold claim to a cordial greeting.

Further illustrations of M. Nénot's work will be given next week.



## R.I.B.A. ANNUAL ELECTION RESULTS.

The results of the annual elections are recorded in the subjoined reports of the scrutineers, which, in accordance with the by-law, were read at the general meeting on Monday week.

The scrutineers appointed to count the votes for the election of the council and standing committees for the session 1917-18 beg to report as follows: 563 envelopes were received—275 from Fellows, 284 from Associates, and 4 from Hon. Associates. Three were rejected as they contained letters. The result of the election is as follows:

President (unopposed).—Henry Thomas Hare.

Past-Presidents (unopposed).—Thomas Edward Colcutt, Ernest Newton.

Vice-Presidents (unopposed).—Sir John James Burnet, Walter Cave, John Alfred Gotch, Paul Waterhouse.

Hon. Secretary (unopposed).—Edward Guy Dawber.

Representatives of Allied Societies (all unopposed).—Robert Burns Dick, Newcastle; John Bradshaw Gass, Manchester; Edward Percy Hinde, Liverpool; William Kaye-Parry, Dublin; Adam Francis Watson, Sheffield; John Watson, Glasgow; Sir Frank W. Wills, Bristol.

Representative of the Architectural Association (unopposed).—Henry Martineau Fletcher.

Hon. Auditors (unopposed).—Henry Albert Saul (F.), Hubert Springford East (A.).

### Members of Council.

We beg to report that 556 voting papers were received and examined. There were three voting papers entirely rejected. Twenty-six were rejected in regard to the election of Fellows on the Council; nine papers were rejected in regard to the Associates elected on the Council. Subjoined is the result of the election:

H. V. Lanchester, 395 votes; Robert Atkinson, 352; W. R. Lethaby, 346; G. C. Horsley, 345; A. N. Prentice, 338; John W. Simpson, 334; T. E. Cooper, 305; S. D. Adshead, 304; George Hubbard, 303; H. D. Searles-Wood, 290; A. Keen, 286; F. M. Simpson, 273; A. G. R. Mackenzie, 267; J. J. Joass, 262; G. Gilbert Scott, 253; H. P. Burke Downing, 251; D. B. Niven, 240; P. S. Worthington, 239.

### Associate-Members of Council.

L. P. Abercrombie, 358 votes; W. R. Davidge, 331; Leslie Wilkinson, 317; Leonard Rome Guthrie, 286; H. W. Cubitt, 256; H. Shepherd, 240.

### Art Standing Committee.

Fellows.—Ernest Newton, 440 votes; Sir J. Burnet, 411; E. G. Dawber, 388; J. A. Gotch, 376; Robert Atkinson, 369; Sir Aston Webb, 362; Halsey Ricardo, 345; G. G. Scott, 326; A. Keen, 201; W. A. Forsyth, 279.

Associates.—S. K. Greenslade, 430 votes; J. B. Fulton, 422; H. S. East, 393; J. E. Newberry, 354; W. A. Webb, 327; C. E. Sayer, 280.

513 voting papers received, of which 17 were invalid.

### Literature Standing Committee.

Fellows.—P. Waterhouse, 445 votes; H. H. Statham, 417; A. T. Bolton, 415; H. Townsend, 409; A. E. Richardson, 406; D. J. Blow, 379; A. Stratton, 378; H. H. Wigglesworth, 375; L. Ambler, 368; T. Tyfe, 325.

Associates (unopposed).—L. P. Abercrombie, W. J. Davies, F. R. Hiorns, S. C. Ramsey, L. Wilkinson, W. L. Spiers (deceased since issue of voting papers).

407 papers were received, of which 8 were invalid.

### Practice Standing Committee.

Fellows.—Max Clarke, 351 votes; George Hubbard, 349; Alfred Saxon Snell, 349; William Henry Atkin-Berry, 331; Alexander George Mackenzie, 329; David Barclay Niven, 310; H. P. Burke Downing, 308; Alan E. Munby, 288; Francis William Troup, 273; William Gilbee Scott, 271.

Associates.—A. N. Wilson, 363 votes; H. V. M. Emerson, 292; J. D. Scott, 273; P. M. Fraser, 251; C. E. Hutchinson, 241; J. H. Markham, 222.

515 papers were received, of which there were invalid 31.

### Science Standing Committee.

Fellows.—H. D. Searles-Wood, 396 votes; H. P. Adams, 363; A. Conder, 355; W. E. V. Crompton, 351; G. Hornblower, 343; S. Perkš, 327; A. O. Collard, 299; R. S. Ayling, 297; H. Cheston, 290; O. C. Hills, 239.

Associates.—E. S. Hall, 304 votes; W. R. Davidge, 287; R. J. Angel, 235; D. L. Solomon, 219; A. Young, 210; H. Shepherd, 208.

Received 486 papers, of which 20 were invalid.

## THE INSTITUTE OF SCOTTISH ARCHITECTS: FIRST ANNUAL CONVENTION.

On Friday, June 8, the inaugural meeting of the Institute of Scottish Architects took place in Edinburgh. For several months past an interim council, composed of representatives from the various Scottish architectural societies, have devoted much time and consideration to the preliminary work of organisation, including the framing of the constitution and by-laws, which have now received the approval not only of the Scottish Institute, but of the Royal Institute of British Architects, to which body they were in due course submitted.

The first convention, which is intended to be an annual event, was held in the Royal Scottish Society of Arts Hall, George Street, Edinburgh, and was attended by a representative gathering of architects from various parts of Scotland. In the forenoon the annual general meeting was held, Sir R. Rowand Anderson, F.R.I.B.A., the first president of the Institute, being in the chair. On the completion of the ordinary business, the President delivered his valedictory address, which is held over for want of space.

The members of Council for the ensuing year are as follows: President, Sir John J. Burnet, F.R.I.B.A., Edinburgh; vice-presidents, James Findlay, Dundee; Harbourn Maclellan, Aberdeen; T. F. Maclellan, A.R.I.B.A., Edinburgh; and John Watson, F.R.I.B.A., Glasgow. Ordinary Members: James P. Bruce, Dundee; A. Lorne Campbell, F.R.I.B.A., Edinburgh; James K. Hunter, F.R.I.B.A., Ayr; William Kelly, Aberdeen; James Lochhead, F.R.I.B.A., Hamilton; Thomas P. Marwick, A.R.I.B.A., Edinburgh; Alexander N. Paterson, F.R.I.B.A., Glasgow; Alexander Ross, LL.D., F.R.I.B.A., Inverness; Thomas Ross, LL.D., Edinburgh; T. L. Watson,

F.R.I.B.A., Glasgow; W. B. Whitie, F.R.I.B.A., Glasgow; John Wilson, F.R.I.B.A., Edinburgh; Colonel J. B. Wilson, F.R.I.B.A., Glasgow; and George P. K. Young, F.R.I.B.A., Perth.

A largely attended luncheon took place after the business meeting, and was followed by a visit to the exhibition of the Royal Scottish Academy. Later in the afternoon a reception was held, at which a considerable number of ladies were present and many distinguished members of the general public.

Several speakers took part in the proceedings, including the senior magistrate of the city as representing the Lord Provost, who was unavoidably prevented from being present, and on whose behalf were expressed the good wishes of the municipality for the future of the Institute.

## COMPULSORY TOWN PLANNING.

Mr. John S. Brodie, Borough Engineer of Blackpool, in discussing a paper by Mr. W. Rees Jeffreys on "Road Construction and Improvements by Means of Town Planning Schemes," read before the Town Planning Institute, says:—

My own experience has been that new arterial roads carried out partly at the cost of the abutting owners of the land and partly at the cost of the local authority, under private Acts of Parliament, have been constructed both well and economically. The suggestion for simplified schemes, defining main roads, building lines, and rental values of property to be erected, I have found to work satisfactorily in practice. I do not, however, share the disappointment of the author as to the slow rate of progress of town-planning schemes, as I think this is a case where we must make real progress slowly but surely. My own feeling is that if an expert central staff of town planners is set up, then there will be several objections thereto: (a) It will be urged that such a central staff cannot have the necessary local knowledge at first hand. (b) That such a central staff will surely become stereotyped and inert in its methods. (c) That the sacred English principle of self-government, or government by consent of the governed, will be seriously and injuriously affected. (d) That local authorities, who bear the expense, must have a decisive voice in controlling the expenditures. On the other side there would be certain counteracting advantages, such as: (e) In the case of an unwilling or obstructive local authority, a central authority, in the shape of a commission attached to the Local Government Board, would, I think, be the only feasible method to carry out what has been called "compulsory town planning." (f) In the case of small local authorities, unable to provide competent staffs, there would be a reasonable prospect of a satisfactory work being done by a central staff, as suggested. I agree with the author that housing and town planning go together, and should always be considered together, as without housing there can be little need for town planning, and we have seen by past experience what housing without town planning leads to. As regards finance, I am clearly of opinion that the cost of arterial roads will in future be borne in ascertained proportions by: (g) The owner of the land or property abutting by contributions in land or money, or both; (h) The local authority; and in the case of main "backbone" roads through several districts; (i) By grants from Imperial funds, in addition to the contributions from the private owner and the local authority.





## WAR BUILDINGS SECTION

### SCHOOLS FOR MUNITION WORKERS.

VARIOUS schools for the instruction of men and women who wish to become munition workers have been established, and this week we show a few interior views of one of the London County Council schools of instruction. The first illustration shows the theory class at work. It will be noticed that the black-

board diagrams refer to (a) cutting tools used in a lathe; and (b) methods of belting employed in transmitting power to the lathes. The second illustration is of students engaged on simple turning operations and on vice-work. In the third view the work is more advanced, and includes gauge-making. In the foreground is a

mechanical saw for cutting off lengths of iron rod. In these schools all the more simple elements of machine-shop practice are carefully and thoroughly taught, and the enthusiasm of the students is as remarkable as the ability of the teachers. At the end of a three, six, or ten weeks' course most of the students



CLASS INSTRUCTION.





SIMPLE TURNING AND VICE-WORK EXERCISES.

have acquired a useful insight into the nature of the work in which they will be required to assist in the munition factories. Some thousands of them, including a great many women, have passed through the London County Council munition schools, which are therefore doing the State much service.

Below we resume the account, of which the first instalment appeared in last week's issue, of the travelling exhibition of the work of women munition workers which was last held at Bristol.

#### *Internal Combustion Engines.*

The exhibition shows a great variety in the photographs and specimens of the parts of internal combustion engines, including parts of the Clerget, Hispana Sulza, 4A, Le Rhone and Diesel engines, as well as of types used in "tanks," tractors, motor omnibuses, and motor lorries.

Among the specimens are the Clerget cylinder, from the rough forging to the finished article; and air-pump and a petrol-pump completely machined, fitted and assembled by women; a bearing for the back-end of a cam-shaft turned and faced to .0005 in.; a steering screw turned and faced for grinding to limits on all diameters of .005 in., the thread generated accurately without limit and the diameter round to .0005 in.; and a tappet lifter rough turned to .005 in. on all diameters, the jaw milled outside to .005 in. and inside to .0005 in., drilled and machined to close fit without limit, screwed and ground to .0005 in.

#### *Aircraft.*

In aircraft specimens are shown of work in drilling, welding, marking off, filing, riveting, bending, wiring, pressing, turning, boring, milling, screwing, and painting; adjusting the wires and sockets, etc., assembling parts of rear skid and wing flaps, making ribs, and assembling them, and making complete nose parts. The photographs show many other views, as, for example, women turning out metal aeroplane parts to drawings on engine lathes, set up by themselves, filing ball-

race cages and brackets for aero-controls, making and adjusting cable slips to micrometer, welding parts in the oxy-acetylene flame, rib-making, assembling, and screwing elevators, and ailerons, making aeroplane noses, binding and colouring main planes, inspecting planes and fabric scenes, making double target, balloons, and gun targets, and electric-testing aircraft instruments.

#### *General Woodwork.*

In woodwork women are shown operating chamfering machine and circular cross-cutting saw; grooving handle cloats

with circular cutter, cutting tongues on a circular saw and battens on a 24-in. cross-cut saw; operating horizontal boring, chain mortising, and sand-papering machines, the last two on felloes for ammunition wagon wheels. In one interesting view they are demolishing old purification trays for phenol plant, and making up the serviceable parts into new frames with chisel, saw, brace, screwdriver, and plane.

#### *Optical, Glass-Blowing, and Electrical Work.*

A considerable number of views show women in optical and electrical work, and many very beautiful specimens were also exhibited. A large display is made of lenses done at the Northampton Institute by women in training under the direction of the Optical Mission and Glassware Branch of the Ministry of Munitions. In light glass-blowing (lamp work) many specimens of medical and surgical work are shown, some involving great skill. In electrical fittings, the principal exhibits are magnetos of two types, on which from winding the armature with .0036 wire to making the metal parts and assembling the condenser, the women appeared to have done almost every essential operation.

Various appliances and a number of photographs were exhibited in connection with the welfare work, which is an increasingly important element in the introduction of women into history.

#### RAPID CAMP CONSTRUCTION.

That the methods of modern skyscraper and reinforced-concrete building construction do not apply to erecting a temporary camp has been disproved again by a New York contracting firm, which has just completed in less than two weeks quarters for 2,400 men, who will ultimately be called to a Reserve Officers Training Camp at Fort Myer, Va.

An order for the construction of this camp was received unexpectedly on the afternoon of Thursday, April 26, by the



ADVANCED LATHE AND VICE WORK.



George A. Fuller Company. Work was begun on Friday morning, and the following Friday most of the buildings had been erected, a large part of them had been glazed, and some of them had been finished. During the following week the construction was entirely completed. Each of the buildings will house a company of 158 men. In addition to the barracks, a large mess hall and kitchen and a building with lavatory facilities were constructed.

A large proportion of the gangs of carpenters and labourers needed were withdrawn from a dozen or more big contracts under way within a short radius of Washington, and rushed to the camp side. The million feet of lumber, and the sash and trim required, were bought on short notice from Washington yards and sent across the river in motor trucks. The hardware was also obtained locally, but the plumbing was bought wherever the contractor's purchasing department could locate stock for immediate shipment, and sent to the work by express.

The first labour gang dug post holes, and was followed by another setting foundation posts. These were followed in turn by the carpenters, the men placing the sand-and-tar composite roofing, the glazing, and other work. A portable saw-mill, run by gasoline engine, was sent to the work and moved along in three or four set-ups from one end of the camp to the other as the carpenter work proceeded. In this way all the cutting off and framing was done by power, the carpenter labour being kept busy at erection. No painting was required.

Work was carried out under the general direction of James Bird, vice-president of the George A. Fuller Company, with J. W. Cramer as superintendent.

## TRADE AND CRAFT.

### *Gas Cooking Apparatus in War Buildings.*

One of the direct products of the war that may already be accounted an undoubted benefit is the "Welfare" movement, which, as everybody knows, has produced astonishing results in the industrial sphere. To provide rooms for

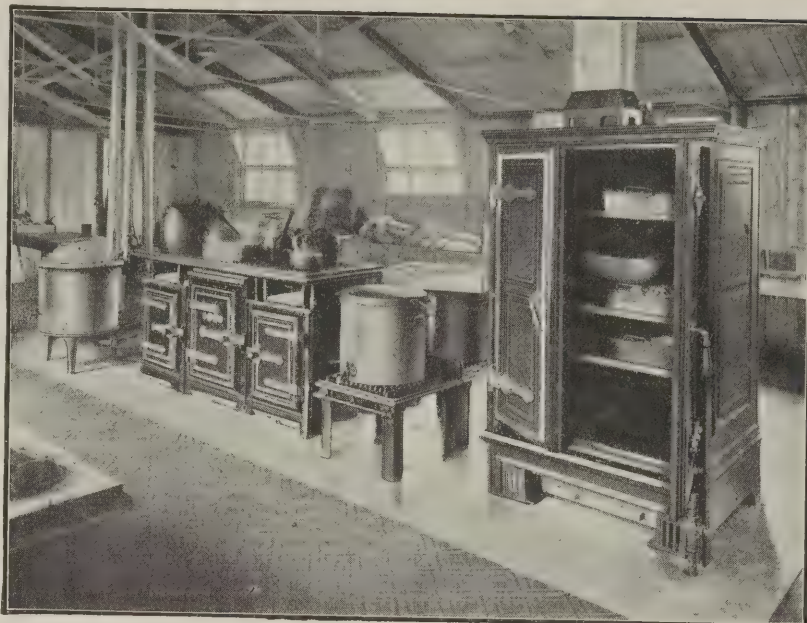
meals, rest, and recreation in connection with their workshops and factories is now largely regarded as a duty by employers of labour, who, indeed, have come to realise that the policy pays by reason of the consequent improvement in the health of their employees and the accompanying beneficial effect upon production.

The rapid development of the "Welfare" movement has naturally placed a heavy strain upon the manufacturers of canteen equipment, who, however, have risen nobly to the occasion. One of the most important considerations has been the provision of cooking apparatus. A variety of heating agents have been employed—coal and coke (direct heat), gas, steam, and electricity, and it may be said that gas has efficiently fulfilled all the requirements involved. Certain firms of gas engineers have given special attention to the design and manufacture of gas appliances, among them Messrs.

Fletcher, Russell and Co., Ltd., of Warrington, who have brought to the problem the ripe experience of a large practice extending over the space of many years. The firm have carried out important installations of varying size and for a variety of purposes in all parts of the country. They have equipped with cooking apparatus munition factories, military hospital kitchens, canteen kitchens, and training camps, in addition to providing apparatus for the direct production of munitions of war, with which we are not for the moment concerned, though it may be said in passing that, as we were able to show in an article published in a recent issue, gas is now being extensively employed on a variety of manufacturing processes. One of the immense advantages of gas is that it admits of such easy and complete control.

The accompanying illustrations show two typical cooking installations that have been recently carried out—the upper at a military hospital for 800 patients, and the lower at a large munition factory where meals have to be provided for 3,000 persons. The installations are made up of a variety of units—ranges, ovens, boilers, etc.—and it is obvious that the composition of an equipment must vary with the number of people to be provided for. It is in this respect that Messrs. Fletcher, Russell are able to give very valuable service, their extensive experience enabling them to estimate precisely the size and number of units required to perform a given service and to ensure the highest economy with the maximum efficiency. Gas has been found to fulfil every requirement of hygiene, and its use has made the actual work of cooking easy. Messrs. Fletcher, Russell are willing to place their wide experience as specialists in gas cooking appliances at the service of architects and others who may be engaged in the erection and equipment of hospitals or munition workers' canteens.

We understand that Messrs. Fletcher, Russell and Co. will be represented at the Domestic Economy and Household Management Exhibition which is to be opened on June 25 in the unfinished London County Hall building on the south side of Westminster Bridge.



COOKING INSTALLATION AT A MILITARY HOSPITAL.



TYPICAL INSTALLATION AT A MUNITION FACTORY.



## HOMES FOR DISABLED OFFICERS AND MEN.

The urgent need that some adequate provision should be made for officers and men of the Navy and Army broken in the present war is causing anxiety not only to the authorities but to all who are interested in the future of this country and the Empire. Already there is a very large number of these to be provided for, and for whom a life in the open will be the only means of making a gradual but sure recovery from their disabilities. The subject has been taken up by a large and influential body of ladies and gentlemen, and a scheme has been put forward under the name of "The Homestead Association," which it is hoped will be of material assistance. The objects of the Association are: To shelter disabled men; to endeavour to cure their disabilities by giving the men the comforts of a home, whether suffering from a permanent disability or not; to teach such occupations as the various disabilities will allow, special attention being paid to agricultural pursuits; and to co-operate with other bodies which may make it their business to provide employment to those whose condition of body is not perfect.

The problem before the Association is to build small houses, and to purchase and utilise existing houses, some of which will be suited for married couples, with a sufficiency of land attached so as to provide profitable employment for the occupiers to utilise all their powers, and while ensuring enough exercise not to overtax the strength of the disabled men, at the same time the object is to enable a man to support himself from the fruits of his own work, so that if possible he will not have to spend his pension, but may allow it to accumulate so that when he is further recovered he may be in possession of some small amount of capital. In these houses will be sheltered, too, such men as cannot be expected to work, but who are in need of perfect rest and idleness. The amount of land to be purchased will, of course, depend on the amount of money which it is possible to get from the public or from other sources, but it is advisable in the first instance not to attempt to carry out any such work unless it can be done on a large scale, which is one of the conditions of economy.

## REINFORCED - CONCRETE VESSELS.

Commenting on this subject "Engineering" observes: The fact that the building of ferro-concrete vessels has been commenced on a fairly large scale, first in Norway and now also in Sweden and Denmark, has naturally centred a considerable amount of technical interest on the question. In Sweden it has been discussed at some length, both in the technical Press and at meetings of engineers.

One of the points which have been insisted upon by opponents of the material is the inability of concrete to resist the influence of salt water, however excellent it admittedly is in fresh water. The danger arises from the lime liberated, in the process of hardening, entering into combination with the sulphuric acid and magnesium salts of the salt water. At the instance of the German Concrete Union, the Prussian Department for Public Works, and other authorities, some extensive tests were commenced at the island of Sylt in the North Sea, and these tests

have not yet been terminated. Concrete blocks were laid on the shore, fully exposed to the chemical and mechanical influences of the sea. The blocks were moulded in two mixtures, A and C, the cement of the former containing about 65 per cent. of lime, and that of the latter only 61 per cent. to 62 per cent. But the latter was richer in alumina and iron, 10 per cent. to 12 per cent., against 6 per cent. to 8 per cent. in A. The concrete blocks were so placed on the shore that at high water they were entirely submerged, and at low water only partly so. After as little as two to three years the C blocks, even such as were moulded in mixtures 1:2, showed fine cracks, and after three to four years the surfaces had all suffered much. The A blocks, in a rich mixture, stood the test better, and in mixtures 1:2 they were unaffected after four to five years; with poorer mixtures, 1:4, the edges had suffered, and with still poorer mixtures were much affected after as little as one to two years.

Recent experiments in the United States have shown that an addition of 5 per cent. of finely ground clay to a mixture 1:3:6 rendered it more resistant, also more so than the same mixture with 10 per cent. of lime added. On the whole, however, all the test blocks suffered more or less.

In spite of all this there are numerous cases in which concrete has withstood the influence of salt, even very salt, water quite satisfactorily; it is in almost universal use for harbour works, etc. The current explanation of the unfavourable effect of salt water upon concrete is that the sulphate of magnesium in the water combines with the lime in the concrete, forming sulphate of calcium, which is of larger volume and therefore has a bursting effect upon the concrete. There are, however, many other kinds of cement, and especially cement of the so-called puzzolana type, not only free from a surplus of lime, but with a surplus of silicic acid, and thus able to bind free lime. The addition of such kinds of cement and other substances containing silicic acid has therefore for a series of years been used as a protection against the undesirable effects of salt water.

In the reports for 1915 from the Gross Lichterfelde West Material Testing Institution some exhaustive laboratory experiments as to the influence of different solutions upon concrete mixtures of 1:3 and 1:6 were dealt with. The concrete was, as a rule, exposed to the effect of the solutions during a period of six months, a comparatively short time, but, on the other hand, the solutions were strong, as much as 10 per cent., or entirely saturated. Portland cement, with 63.23 per cent. of lime, was used. The following solutions were employed at the tests: (1) Chloride of sodium, up to 100 grammes per litre; (2) sulphate of sodium, up to 100 grammes per litre; (3) sulphate of calcium, saturated; (4) sulphate of magnesium, up to 100 grammes per litre; (5) chloride of magnesium, up to 100 grammes per litre; (6) chloride of calcium, up to 100 grammes per litre.

The 1:6 concrete was all more or less affected, but all the 1:3 concrete tests showed that no harm had been done to the concrete, except in one case, in which the block had been kept in a closed exsiccator during the hardening, and had been submerged in sulphate of calcium solution. The use of too much fine sand in the mixture is undoubtedly injurious. This was shown very plainly in "Le Ciment" last year. The unsatisfactory result of the American tests already referred to may to

a great extent be attributed to the very fine sand which was used for the mixtures.

It is clearly evident that concrete can only be affected by sea water to the extent the water penetrates it. If the concrete is sufficiently dense, nothing but the surface is exposed to any risk, and the making of dense concrete is no longer a novelty. It goes without saying that more especially in concrete vessels every possible care is taken in this respect.

Protective measures in the construction of concrete vessels may be summed up as follows: (1) The use of rich concrete; (2) the use of cement with but little free lime, gypsum, and alumina; (3) the addition of puzzolana to fix the free lime; (4) the use of coarse sand; (5) the use of dense concrete; (6) surface treatment. Should the cement boatbuilding industry develop there should not be much trouble in guarding against decay if full use be made of our present knowledge.

In conclusion the advocates of concrete as shipbuilding material urge that concrete in any case is more resistant than steel. The fact remains that reinforced concrete vessels are in existence and are being built, although it is premature at present to express any definite opinion as to their durability and strength.

[There have been raised, of course, a thousand-and-one objections to the use of reinforced concrete for shipbuilding. Almost every audacious proposal has been met with a strong *non potest*. When steam navigation was proposed, some confident sceptic said he would eat the first steam-propelled boat that crossed the Channel. After a very short interval, the inventor sent the sceptic a knife and fork, with proof that the boat had qualified for the fulfilment of the undertaking.]

## THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

A general meeting of this Institute was held at 31, South Frederick Street, Dublin, on June 7. The President, Mr. W. Kaye-Parry, M.A., B.E., occupied the chair.

The President announced that Mr. Louis E. H. Deane had been co-opted on the Council to fill the vacancy caused by the resignation of Mr. Allberry.

Mr. P. J. Lynch reported that the committee on ancient and historical buildings had under consideration the proposed removal of portions of old St. Nicholas Church (built 1707) in Nicholas Street. He had seen the city engineer and obtained permission to have an accurate drawing prepared of the portion which remains, and a photograph taken as records. It was the opinion of the committee that no further action was needed.

The following resolution was passed: "That the Royal Institute of the Architects of Ireland considers that the prolonged delay in announcing the result of the competition for designs for the proposed university buildings of the National University of Ireland is most unfair to the competing architects. The designs were submitted in June, 1916. A memorial signed by a great number of competitors requested a short extension of time, which was refused; although, owing to the disturbances during Easter of last year, the work of many architects was seriously interfered with for a considerable time. The Royal Institute of the Architects of Ireland would urge that the Senate should announce the result of the competition without further delay."



# THE ARCHITECTS' AND BUILDERS' JOURNAL.

JUNE 27, 1917.

TOTHILL STREET, WESTMINSTER.

VOLUME 45. No. 1173.

IN suggesting, last week, that bomb-proof shelters should be provided at schools within the air-raid danger-zones, we anticipated a somewhat similar proposal which has been adopted at Hythe. It has been there decided by the corporation to mark a number of cellars and basements in the town as places affording suitable shelter during a raid. Whether this is altogether a wise course is open to doubt. People may be tempted to crowd into these shelters in inconvenient numbers, and, in making for them, to leave their homes, where they would be comparatively safe, and traverse streets that might be highly dangerous. It is easy to suppose, however, that Hythe Corporation's temporary expedient will be the forerunner of some permanent provision for safety from air-raids. Architects and engineers are no doubt devising schemes for permanent shelters, which, it may be assumed, will be usually underground; and they should be so constructed that they can be put to business uses during the long interval of peace which must ensue upon the present devastating war. Capacious subways under the principal streets of large towns seem to offer one solution. With respect to schools, especially—but of course the suggestion applies to other buildings—the proposal has been revived of stretching over the roofs nets that should be capable of breaking the force of bombs, and perhaps of causing them to bounce away. Experiment should reveal whether or not this plan is at all feasible. We must confess that we have not much faith in it.

Folkestone Town Council, it is announced, has passed a resolution expressing the opinion that the damage done in the town by the air-raid is a Government liability, and asking the Government to compensate the sufferers. We have always felt that such claims are entirely just. The people naturally look to the State to protect them from enemy attack, and to compensate them for losses sustained where protection fails. If there is no financial provision for such compensation, a short Bill remedying this defect should be passed without delay, even if it should involve a slight increase in taxation. To prevent absolute ruin falling upon persons whose property is destroyed by the enemy would be not only just and humane but politic. It would make for mutual sympathy between the Government and the lieges, and would eliminate one not unimportant element of nervous apprehension, for it is in the highest degree necessary to sustain in every possible way the splendid attitude of cheery stoicism which the British public have assumed towards enemy air-raids. We are all prepared "to suffer and be strong," but financial ruin through our houses tumbling about our ears is intolerable because it is unnecessary, and because failure to relieve such distress seems to argue a callousness, or an ineptitude, with which the Government cannot be justly charged, although substantial proof of their sympathy, and of their ability to deal with the problem, is for the moment lacking. If there are legal difficulties, they should be swept aside; and the more complex they may be, the greater the occasion for a display of that "audacity" of which the Prime Minister assured a Labour deputation the other day that he was "not afraid." In France, whence he got his fine phrase of audacity thrice reiterated, the sufferers from the destruction of property are to be compensated as a

matter of course, and what prevents our following so excellent an example is yet to be satisfactorily explained.

What is most obvious is often most easily overlooked. It has long been perfectly clear that architects require direct representation in Parliament, but the idea, when broached by Mr. C. Fitzroy Doll at one of the informal conferences of the Institute, seemed to take the meeting by surprise. No doubt the profession has many influential friends in Parliament, before whom, as occasion may arise, it can bring matters that require attention; but if other professional organisations have found it advantageous to have their interests directly represented, the same benefits might be expected to accrue to organised architects. Their case is in some ways peculiar. In the first place, theirs is an art, and there is something ludicrous in the association of art and legislation. On this point it is easy to lay too much stress. Art has its practical side; and if it were less casually represented in Parliament, fewer mistakes like that of passing the Charing Cross Bridge Bill would be made, and the Government's early misadventures in the domain of building contracts might have been avoided. What is of equal importance, the presence of one or two representatives in Parliament would have gained for architectural organisations the respect that is always accorded to those who are backed by a solid voting force. When the R.I.B.A. placed its organisation at the disposal of the Government, the offer lacked the driving force that a direct representative in the House would have supplied. The Government was almost compelled to ignore the Institute as "a merely professional body," because it had given no practical proof of political influence. A member of the Institute sent to Parliament would signalise its corporate strength, its unity of purpose, and its determination to assert the interests on which it is entitled to be heard.

Those interests are by no means so sectional or so selfish as some that have moved other organised bodies to send representatives to Parliament. It is no very extravagant claim that many, if not most, architects are platonic lovers of their art, and that a typical representative would act in that sense—with public spirit, and with fine detachment from merely professional interests. These interests, however, as every architect knows, are of considerable importance. There are many grievances which the profession has borne too long in silence. There is, for example, the unsatisfactory position of the architect in the matter of legal responsibility for other persons' torts. Wrongs could be much more easily righted if the profession were directly represented within the door that can now be shut against it, and the architect M.P. could render invaluable public service by bringing his knowledge to bear on the many public questions that fall within his province. Mr. Fitzroy Doll has made, in short, a most interesting suggestion, which may yet materialise to the great advantage not merely of the profession, but of the community at large. On questions of housing and town-planning, for example, the presence of architects in the House would be invaluable. This new and peculiar phase of the Housing question may



therefore be commended to the most earnest consideration of the Institute. It would make a good subject for a further "informal conference."

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In the forty-fourth list of the R.I.B.A. Record of Honour there are two names that evoke special sympathy. Lieutenant Philip Martin Blake Collcutt, of the East Yorkshire Regiment, who was killed in action on May 12, was the younger son of Mr. T. E. Collcutt, Past-President of the R.I.B.A. Captain and Adjutant Roby Myddelton, of the Sherwood Foresters, who was reported wounded and missing on July 1, 1916, and is now believed to have been killed, was the only son of Mr. J. Alfred Gotch, F.S.A., Vice-President of the R.I.B.A. Formal words of condolence fail us in the attempt to express the heartfelt sympathy which all who know them must feel with Mr. Collcutt and Mr. Gotch in their bereavement. Already honourable in the annals of architecture, both names now reflect the lustre that only "the great sacrifice" can confer. We can only trust that grief loses much of its bitterness where death assumes its noblest guise.

\* \* \*

The "Parliament of Industry," or "Builders' Parliament," having passed its preliminary examination, is fairly on the way towards graduation with honours. Its ultimate success would be a great triumph for the building trades, but we hope and expect that they will not be left alone in their glory—that, indeed, other industries will not be contented to hold a watching brief while the system is on its trial, but will rather be encouraged to take immediate steps to initiate similar schemes. As we have previously pointed out, the germ of the idea is to be found in the building trade conciliation boards, which broke away from the primitive practice of attempting to settle disputes by opposing the interested parties, who, very naturally, could do nothing but snarl and wrangle over the bone of contention. Conciliation Boards were an approach towards a more judicial atmosphere. Advocates were necessarily heard, but the court, so to speak, was (or we should say is) composed mainly of employers and employees who were not directly implicated as parties in the dispute. Agreement then became the rule rather than the exception, and employers and workmen began to acquire a sort of incipient respect for each other, because, on the whole, reason had ousted recrimination.

\* \* \*

That seems to be the genesis of the Industrial Parliament. First came private negotiation. Men went to their employers, and were met with scorn by the more selfish, and by the more benevolent with bland regrets that concessions would place the firm at a disadvantage with its rivals. Thereupon the men took thought and organised. United action, they supposed, would bring the employers into line. It did, and the employers saw fit to organise also. Then the representatives of the workers and the employers met on more equal terms, and discussed the issues with less heat, but still with direct personal interest on both sides. Strong local feeling falsified the results, which were decided less on the merits of the case than on the dominating influence of some sturdy or obstinate character on one side or the other. Gradually it was seen that local and personal bias must be as far as possible eliminated, and central boards of appeal were formed. They have worked admirably, but they have not quite fulfilled their early promise of rendering strikes and lock-outs impossible. Too much was expected of them, and the machinery had to be from time to time modified as experience dictated in the hope of ultimately perfecting it. Just before the war broke out, the machinery of conciliation broke down,

and the country was threatened with industrial trouble of unprecedented magnitude. "Labour unrest" had become rampant. Labour leaders no longer led, and agreements made with them were scornfully repudiated by the men they were supposed to represent. In this respect the building trades were by no means peculiar, and this country was threatened with a general and deadly struggle between capital and labour. After the war, it will be more than ever necessary—indeed, it will be imperative—to avert such a calamity, and any and every legitimate means of conciliating discontent should be given a fair trial. Whether the Builders' Parliament will be able to grapple successfully with this hitherto baffling problem remains to be seen. Even as it stands, it is valuable as an earnest of the desire of both parties to bridge the gulf between capital and labour, and to get at the real root of the matter. If the movement is developed in the same spirit in which it has been conceived and started, a new era of industrial peace will have been inaugurated. But we dare not be very sanguine about it. That it involves huge concessions by employers is quite obvious; but if, in the interests of the country, they are prepared to make these further sacrifices, they will not, we think, ultimately lose much that is worth keeping. If co-operation is substituted for antagonism, good-will for animosity, we shall have made a tremendous stride on the path of progress.

## THE PLATES.

*L'Institut Océanographique, Paris.*

M. NÉNOT'S "Palace of the Sea," as it has been called, occupies, in the Rue St. Jacques, the site of the old convent of the Visitandines. In style it is a free rendering of the Italian Renaissance of the sixteenth century. A French critic has said that the architect, "recalling memories of the fine buildings of Northern Italy, has absorbed them into an inspiration which is entirely personal and of harmonious unity." In its general lines it recalls Monaco, in compliment to the generous founder, Albert I., Sovereign Prince of Monaco and Associate Member of the Institute of France; while its decorative details leave no doubt as to its relation to oceanography. The crab, the sea-nettle, the hippocampus, the profusion of sea-shells, the sea-fowl, the porpoise, the sea-nymph, are an almost too emphatic expression of function; but on a hot day in Paris they must be a refreshment to the eye. At any rate, they richly and appropriately adorn the great panel on the tower, and are an enlivening feature of the main entrance. A ground-plan and a plan of the first storey are here reproduced. In the basement there are, besides provision for the usual heating apparatus, coal stores, etc., accommodation for aquaria, and a "salle des animaux." On the entresol or mezzanine floor are a library and a book store; but most of the area of this floor is taken up with the well-spaces for the vestibule, the great and small amphitheatres, etc. The second and third floors are mainly occupied with reception rooms and offices, refreshment rooms, etc.; but on the second floor there is a large library.

*Louis Dreyfus Bank, Paris.*

In designing this building, M. Nénot has triumphed over the depressing effect of an awkward site, which might well have subdued a less resourceful architect to the production of a correspondingly exigent building. M. Nénot, however, has solved his problem buoyantly, and even with gaiety, yet without the *abandon* that would have been inappropriate to a bank. Most of the ornamental features are purely organic, while those that are not give the impression of efflorescing from the building rather than of being stuck on to it; and this is true art.





MODERN FRENCH ARCHITECTURE. VII.—OCEANOGRAPHIC INSTITUTE, RUE SAINT JACQUES, PARIS:  
DECORATIVE DETAIL ON TOWER.  
HENRI PAUL NÉNOT, ARCHITECT.





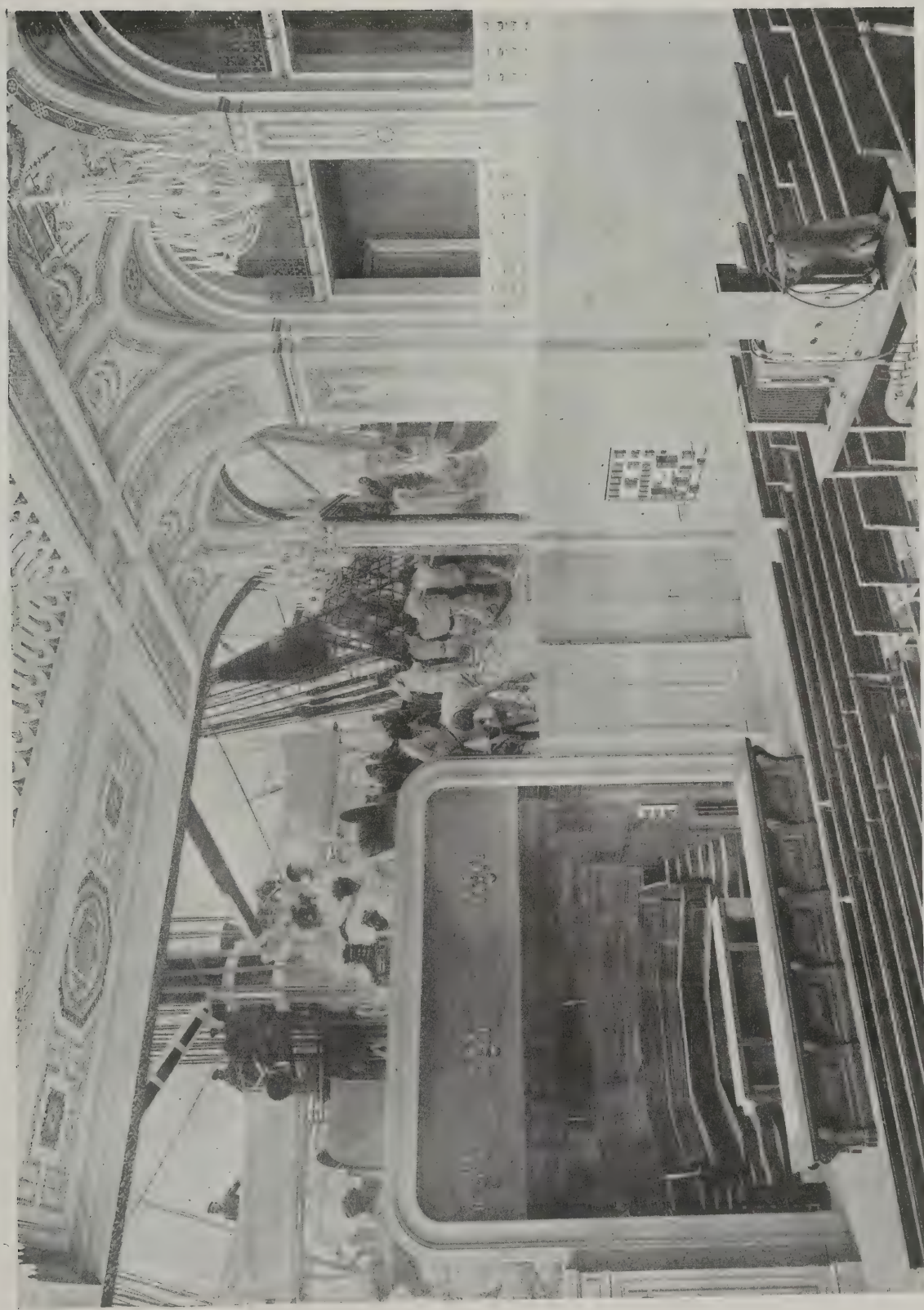


MODERN FRENCH ARCHITECTURE. VIII.—OCEANOGRAPHIC INSTITUTE, RUE SAINT-JACQUES, PARIS: THE LARGE AMPHITHEATRE.

HENRI PAUL NÉNOT. ARCHITECT.







MODERN FRENCH ARCHITECTURE. IX.—OCEANOGRAPHIC INSTITUTE, RUE SAINT-JACQUES. PARIS: LARGE AND SMALL AMPHITHEATRES.  
HENRI PAUL NÉNOT, ARCHITECT.







MODERN FRENCH ARCHITECTURE. X.—ENTRANCE TO LOUIS-DREYFUS BANK,  
PLACE DES VICTOIRES, PARIS.  
HENRI PAUL NÉNOT, ARCHITECT.





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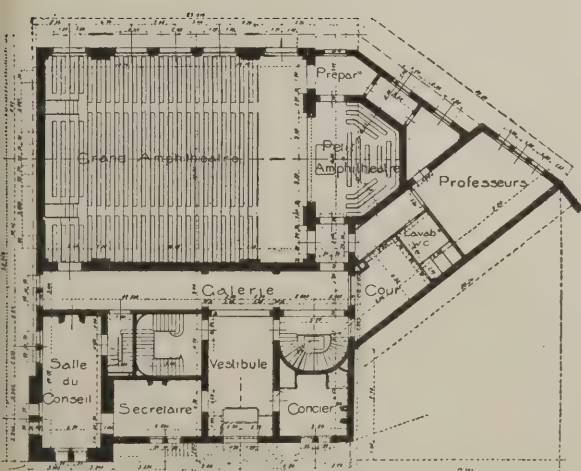


MODERN FRENCH ARCHITECTURE. XI.—LOUIS DREYFUS BANK, RUE DE LA BANQUE, PARIS.  
HENRI PAUL NÉNOT, ARCHITECT.

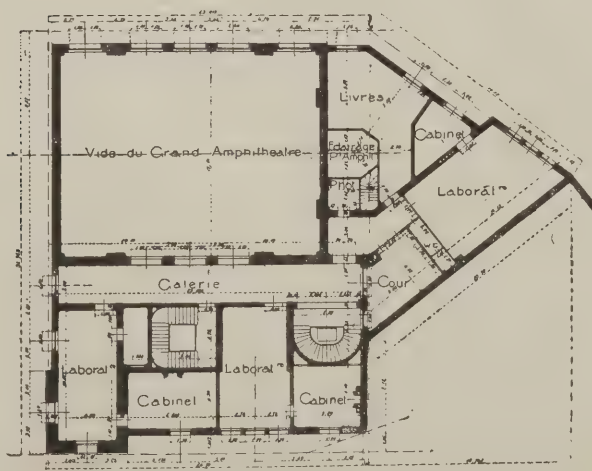




Views of the Principal Elevations.



Ground-Floor Plan.



First-Floor Plan.

LIBRARY  
OF THE  
MUSEUM OF NATURAL HISTORY



## HERE AND THERE.

THERE is something rather humorous in the idea of London University's being on the point of granting degrees in building construction. "Bachelor of Building Construction" would sound rather imposing just at first. By and by we might get Bachelors of Bricklaying, some of them "sweet girl graduates with their golden hair." Afterwards, university alumni would be as cheap as Gilbert's dukes—three a penny, but never so common nor so tame as German bleary-eyed Doctors of Philosophy, who sell themselves body and soul for a morsel of bread or a mess of pottage; and a rare mess they have made of it, with their Nietzsches and their Treitschkes. Weary years ago ambitious young bricklayers and carpenters, flushed with their success in South Kensington or City and Guilds examinations, bombarded the technical Press with demands for university rank. One of them was an interesting young bricklayer who preferred to spell mortar with an e, and whose syntax was certainly no criterion of his skill in putting bricks together—say in English bond.

\* \* \* \*

Very likely he was an excellent bricklayer. Thanks to evening classes, he was certainly expert with T-square and compass-bow; and who shall blame him if the foundations of his scholarship were much less sound than the superstructure he had so laboriously reared upon them? Besides, who is in a position to throw stones or heave brickbats at him for his bad spelling? Is it bad? Etymologically it is, if we may trust the dictionary-makers, who tell us that the word comes from "mortarium, a mortar in which things are pounded, also the matter pounded—mortar." That we do not commonly pound mortar in a mortar is an insignificant detail; although this objection loses force if we concede that the edge-runner mill and the mechanical mixing machine are essentially developments of the hand-mortar. Phonetically, "morter" is the better rendering of the pronunciation; not until all builders have been passed through the mill of the university, and therein pounded and refined, are we likely to hear of "mortah." Bailey, by the way, in his dictionary of 1742, gives you the option of spelling it morter.

\* \* \* \*

When, by and by, the job swarms with Bachelors of Building Construction, and any carrier of hods may have taken a first in Mods, the conversation will naturally become more academical. There will be more languages, but less language. There will be no arbitrary exclusion from it of all subjects save beer and betting. On an unlucky day, someone will raise the question of English spelling, and the disputation will go on for ever. It will begin, perhaps, at a symposium (syn = together, and posis = a drinking), with an observation on the discrepancy in spelling between mortar and porter, the pre-academic bricklayer's alpha and omega of existence, the former bearing to the latter the relation of means to end. The symposiasts will extend the inquiry. They will want to know why cill should be spelt with a c; and, considering that the word is perhaps derived from the same root as solea, and, further, that assigning the same job to two different letters is a flagrant violation of the demarcation rules, your symposiasts will unanimously agree that the practice is silly. This decision will naturally and gracefully introduce the word punning, and the "philolog" of the party will remember that to pun is to pound, in the manner of the pavior or the cement-worker, and that to play upon words is "to pound words, to beat them into new senses," or non-senses as the case may be. Whence it arises that a

man may be either pound-foolish or pun-foolish, or both together, in what the concretor may call "a rich mix" or "a poor mix."

\* \* \* \*

We are like to become very learned in such trifling foolish questions as why storey should have an e in it (a modern innovation); and whether it is any more than an ingenious conjecture that jamb with a b in it is no more desirable than jam with a wasp in it. The philolog will immediately point out that while jamb, an upright, and jam to squeeze are both derived from jambe, a leg—the idea of jamming being that of two uprights squeezing something—jam the confection is from the Arabic jamd, concretion, and is therefore in another galley, or galley-pot. "N. Bailey, philolog," previously cited, has some spellings that later "philologs" have distinctly worsened. He gives us, for example, center, which is now ignorantly regarded as an American spelling. Perhaps it was partly on that account that some pragmatic pedant altered it to centre, thus saddling us with the awkward word centreing, which is generally cut down to centring, thus robbing it of a syllable. (I rather suspect dogmatic Dr. Johnson of this meddlesomeness.) Some daring Americans "reform it altogether" by spelling it with an s—sentering. This Journal, I notice, has gone back to center and centering, but, except in its advertisements, has refrained from the initial "s."

\* \* \* \*

Stanchion, a word on which architects wobble, rendering it, more often than not, stancheon, seems to have been unknown to Bailey, who has, however, "Punchins (in Architecture) are short Pieces of Timber, placed to support some considerable Weight." Punchion he defines very delightfully as "a Chizzle," a form that has only to be seen to be loved. Johnson, in his edition of 1773, has puncheon, and has discovered "stanchion, a prop; a support." In Bailey one had thought to find the early spelling plaisterer, as they still use it in the Worshipful Company of Plaisterers; but he gives us "Plasterer, a Pargetter," which would naturally send the investigator back to Parget, which is "the plaister of a Wall." (Note the i in plaister.) Elsewhere we are told that to plaster is "to dawb Walls, Ceilings, etc., with Plaster." It is all as luminous as an entry in a quite modern glossary of technical terms: "Cow-shed. A shed for cows." It is a fault of these technical glossaries that they reveal so many esoteric mysteries, give away so many trade secrets.

\* \* \* \*

When all the men and women workers on, in, or about a building are university graduates, how brilliant a pageant there will be when the foundation-stone is laid! For the splendour of the Lord Mayor with his chain will be eclipsed by the builders in their academical robes. Only the architect will discreetly stop away, not having a wedding garment; unless he happens to be a B.Arch. of Liverpool. If he is merely an M.A. of Oxford, his tattered robe (suggestive of strenuous "rags" in the quads.) and dingy hood will provoke inquiry as to his technical standing. All the other hoods, taking their high-pitched key-note from the canary gold of the London B.Sc., will be dazzling in the extreme; but the highest light in this gorgeous function will be the shining robe of the Doctor of Decoration. He shall be more variegated, but much more dazzling, than the Pied Piper. Gold leaf shall line his hood, and his scarlet robe with cerulean sleeves shall be bordered with Lincrusta-Walton, hand-gilded. And every blessed unit of the crowd will wear a mortar-board.

DIOGENES.



## SIR ROWAND ANDERSON AND THE NEW SCOTTISH INSTITUTE.

SIR ROWAND ANDERSON, first president of the Institute of Scottish Architects, delivered, at the first convention of the Institute, a statesmanlike address, which we here print almost *in extenso* :—

The occasion of our meeting here to-day is one of great importance to us as architects. It has long been an ambition of many of us to establish greater solidarity amongst us, and now we are within measurable distance of that ambition being realised. Instead of being a united body, as we ought to be, we have hitherto been a series of independent units, and therefore unable to exercise any effective influence on questions of architecture, on which we are competent to speak, or to give mutual and reliable support where we felt our profession was in need of it.

### *Corporate Standing for Scottish Architects.*

All the legal and medical bodies have a corporate existence. Not so very long ago the accountants were like ourselves, a collection of independent units. They are now united under a Royal Charter, and consequently take a much higher position in the professional world than formerly. The bankers and actuaries are also united, and the same can be said of all the building and other trades, and quite lately the measurers, as we used to know them, now the Faculty of Surveyors, have become an incorporated body, and we architects were, until to-day, the only body without a corporate existence. I hope all that belongs to the past, and that we shall now be able to gather up the opinions of architects on all subjects which specially affect us as a profession.

### *Constitution and By-laws.*

This happy state of things has been brought about by a remarkable unanimity of feeling amongst the architects of Scotland. The result is seen in our constitution and by-laws. These documents have been drawn up with great care and thought by representatives sent to meet in Edinburgh to prepare them. A copy of these documents was forwarded to the Royal Institute of British Architects, with an intimation of what we are aiming at, and I may here read to you the letter received by our secretary acknowledging these:

"London, April 20.

"Dear Sir,—Your letter of March 31 bringing to the notice of the Council the formation of the Institute of Scottish Architects was laid before the Council at their meeting last Monday, and Mr. John Watson being present they were able to hear at first hand an explanation of the objects of the new Institute, and the means by which it is hoped to attain them. The Council, I may say, were greatly interested in his remarks, and very sympathetic. They realise the value and convenience of such centralisation, and the advantages likely to accrue to the profession in Scotland from the establishment of a central society. The Council note, with much satisfaction, the reference in the by-laws to the Royal Institute. It will be a great pleasure to them to read a letter on the subject just received from Mr. Alexander N. Paterson, in which the view is expressed that the Institute of Scottish Architects may serve, in collaboration with the Royal Institute, to extend and strengthen the latter's influence for good north of the Border, while at the same time promoting the Scottish interest in the appreciation of their own national architecture and the encouragement of its development.

"The Council desire me to assure you that they welcome very warmly the formation of the Institute of Scottish Architects. Its proceedings will be followed by them with sympathetic interest and with the sincerest wishes that the objects of the founders will be achieved and their aspirations realised. The Council

also wish to tender their hearty congratulations to your Institute upon the admirably drafted constitution and by-laws.

"Yours faithfully,

"(Signed) G. NORTHOVER,

"On behalf of the Secretary."

This is most satisfactory, and you will see from it that our relationship with the R.I.B.A. is not to be weakened, and I am sure you will all be glad of this. I believe we shall strengthen that body, because, instead of getting only a few individual opinions from Scotland, or the influence of those who happen to be members of the R.I.B.A., we shall now be able to collocate the opinions of all our members, and so become a mutual aid to one another in a way hitherto impossible.

### *An Earlier Institute.*

The Institute that is launched to-day is not the first we have known. An Architectural Institute was founded in the year 1850, nearly seventy years ago. It consisted of 170 members, thirty-three of whom were architects. The roll of membership contains the names of many of our leading aristocracy, country gentlemen, university professors, literary and scientific names. It was evidently felt to be a useful institution, as in its third year the membership was about doubled. The object of the Institute was stated to be the "Advancement of the Art and Science of Architecture," and papers were read at the stated meetings on subjects having some bearing on our work; many of them are published in the Transactions of this Institute, and are of considerable value and well worth reading to-day. As was natural, a great deal of attention was paid to the ancient architecture and architects of Scotland, to which David Laing, Joseph Robertson, and R. W. Billings made valuable contributions. Many of the problems which we have to face to-day confronted the earlier Institute, and the Transactions bear evidence of their zeal in advocating better accommodation both in town and country for all classes of the people. Carefully prepared reports on the sanitary condition of Glasgow and Edinburgh doubtless contributed to the better conditions prevailing to-day. In 1852 the Institute acquired a lease of premises at 51, George Street, which they occupied for about ten years.

About this time—that is, 1861—the Institute began to publish illustrations of Scottish buildings drawn to scale, and they continued this down to 1871. The buildings illustrated were few, and chiefly ecclesiastical, and were only partially surveyed, but the collection contains a measured drawing by the late Thomas Hamilton, architect, of the two sides of the West Bow, Edinburgh, perhaps the most interesting and complete record in existence of an ancient Scottish street.

With the last of these illustrations it may be said that the work of the Institute ceased after a long and active existence, and, so far as is known, no meetings were ever held afterwards. Several of those who had taken a conspicuous part in its work died about this time, and the secretary had retired, and no formal winding-up ever took place. One of the last survivors handed over the library books to the Edinburgh Architectural Association, where they still remain. Probably the real cause for the decline of the Institute was that it failed to secure the support of the rising generation of architects. This led to the establishing of architectural associations in Edinburgh, Glasgow, and other places, and to these the youth of the profession adhered and gave their support, and the associations have all been in active existence since. They are now affiliated to the Central Institute, and are in future to be known as chapters. There is still room for another chapter to be



organised at Inverness, and I hope to hear of this being done soon. Then the whole of Scotland will be represented in the Central Institute.

#### *The Aims of the New Institute.*

Now a word or two on what we must do to prepare for the activities that will arise when the war is over. The Institute of 1850 gave much attention to housing and sanitary questions. We must do the same, and aim at a higher standard than ever. At the foundation of this question of housing is that of getting cheaper land for building on. Before that difficult question is equitably solved, very little can be done, and progress in this direction will be slow. Hitherto we have been compelled to pile families on the top of one another, as many as sixteen being accommodated in layers, and all entering off a common stair. I believe attempts are being made to alter this for the better. With cheaper land, the building of self-contained houses could also be greatly improved; and sunk floors, sometimes double, could be abolished, and with them the long and high stairs. This would add much to the comfort of those who have to live in such houses, and the domestic servant question would become less acute.

#### *The Architect's Education and Functions.*

The education and functions of an architect will no doubt engage your attention. This has been under consideration by many architectural societies for some time past. A volume entitled "Architecture a Profession or an Art," edited by two very distinguished men, the late Mr. Norman Shaw and Mr. (now Sir) T. G. Jackson, besides numerous papers on this subject, will be found in the Transactions of various societies. In the Transactions of the Royal Institute of British Architects for 1906 you will find a very complete account of the International Congress held that year in London. Representatives from every country in Europe attended, and this question was much discussed. This year there have been several conferences in London on the education of an architect; but, after a careful perusal of what was said, one feels that no definite conclusion on this subject has yet been arrived at. In my opinion the problem can only be solved by following on the lines of evolution which characterise all the best work of the past.

#### *National Art Survey of Scotland.*

Another work in which I hope we shall take an active part is what is known as the National Art Survey of Scotland. Nothing quickens the intelligence and interests one so much as getting into contact with good work of the time when architecture was the result of evolution and tradition, and not of a fashion dependent largely on the fleeting literary influence of the day. There are great educational possibilities in this work, and in carrying it on we must aim at utilising it so as to give a national bias to our own Scottish architecture. A certain amount has been done in this direction, and is now beginning to bear fruit, but until we get the surveys completed and published in a form and at a price which will bring this work within the reach of all its value and influence will not be fully felt.

These are only a few of the directions in which the Scottish Institute will no doubt exercise its activities and influence. Others will be dealt with as they arise.

#### *Real Education Wanted.*

Education is wanted of a practical kind in all work connected with building—not the education of mere drawing and skill in reproducing (and, as we see everywhere, misapplying), but critical and analytical teaching that will bring home to the student the origin, the nature and development, and uses of all ancient work in every department, along with a sound knowledge of all mechanical and natural laws, so as to ensure health, stability, and economy. On such lines architecture has a great future before it. In the other constructive arts a similar advance is being made. In many works

of civil engineering, especially on the Continent, there is not that tendency to misapply architectural features as formerly, and many works have been, and were being, executed before the war, with a distant expression of their purpose, and a rational treatment of the materials employed. In mechanical engineering much greater progress has been made. If you look at the designs of machinery of seventy and eighty years ago you will see the five orders of architecture copied with great accuracy, classic arches with keystones, Gothic arches with spandril ornaments, and other architectural features, all applied in a way contradictory to their own nature and the thing they are applied to. The necessity for bringing machinery up to the highest attainable state of perfection led to the gradual elimination of all features and decorative work borrowed from structures in a state of rest, as incompatible with structures full of active strains and thrusts. All the forms are now metallic and modelled, like every original structure in nature, to express and emphasise their functions, and nothing is there for mere show. Each machine expresses consequently to the educated eye its purpose.

#### *The Quality of Beauty.*

A late writer on art has maintained that fitness and adaptation occasion only satisfaction, and not the higher pleasure arising from beauty; but I hold that beauty, if not entirely, is almost entirely, composed of those two qualities. The designing of machinery, whether for peace or war, has now reached such a high standard of excellence in function, form, and expression that one is justified in saying that these things are entitled to rank as works of art as much as a painting, a piece of sculpture, or a building, and also that machinery is the only true constructive art that has been produced since the decline of mediæval architecture. Moreover, in conjunction with the best art of former days, the designing of machinery teaches this important lesson—that man does not, unless warped by bad education and false criticism, construct anything except in a natural, functional, and therefore artistic manner.

#### *Fine Art and Utility.*

The great and only hope of architecture lies with the public; they must ask for and insist on getting structures soundly and sanitarily constructed and adapted to the purposes for which they are erected; then men able to carry out such buildings in an artistic and a truthful manner will, by reason of this determination, be called into existence. Architecture must cease to follow the transient literary and æsthetic fashions of the day, the absurd distinction of fine art from that which is useful or mechanical, and of architecture from building, and all the talk about applied art must give way to that which is produced as in nature if we are ever to get into a clearer atmosphere of reality than now surrounds us, and we must put ourselves in line with the science of the day. Then we may look forward to erecting buildings fitly representing the ideas and wants of the age, with a constant succession of ever-varying expression and beauty, with natural dignity, and not artificial picturesqueness. That time may not be very far away. Ever since the penetration into Europe of the Arabian doctrine of the supremacy of reason over dogma, which many maintain to be one of the chief factors in the renaissance of learning and art, the world of thought has been in a state of transition. The causes that have been ceaselessly at work since then are now gathering great force, and the victory of reason and law seems now assured. When that takes place art of every kind will then be the material expression of it, and the great creative intellect of man, untrammelled by worn-out traditions, but utilising all that is good and of universal truth in the past, will have free play, and the world will see structures greater, grander, and more useful than any that have ever existed.



## BUILDING TRADES PARLIAMENT OF LABOUR SCHEME.

An important step in the direction of improving the relations between employers and employed and of averting disputes has been taken by the building trade. This industry, in which 800,000 men were employed before the war—about half of this number are now in the fighting forces or are engaged in munition work—has adopted the Parliament of Labour scheme formulated by Mr. Malcolm Sparkes.

The National Federation of Building Trades Employers of Great Britain and Ireland some time ago received a deputation from the National Associated Building Trades Council, who brought forward the scheme of an Industrial Parliament for the building trade, and as a result of the discussion it was resolved to hold a joint conference, which took place at Pen Corner House, Kingsway, on Wednesday last.

As showing the representative character of the operatives delegation, it may be mentioned that the National Associated Building Trades Council embraces the following unions: Amalgamated Carpenters and Joiners; General Union of Carpenters and Joiners; Operative Bricklayers' Society; Manchester Unity of Operative Bricklayers; Operative Stonemasons' Society; National Amalgamated Operative Painters' Society; Amalgamated Society of Woodcutting Machinists; Slaters' and Tilers' Society; Electrical Trades Union; United Operative Plumbers' Association; National Association of Operative Plasterers; United Builders' Labourers; National Union of General Workers; National Association of Builders' Labourers; Navvies' and General Labourers' Union; United Order of General Labourers.

The Conference, according to a writer in the "Daily News" of June 21, was of an amicable character throughout. From the first it was apparent to the men's leaders that the employers took the scheme quite seriously. It was amended in parts on suggestions from both sides, and some of the employers' proposals for improvements were seconded by the men's representatives. The building trade has had eleven years' experience of Conciliation Boards, and at the present joint-conference it was admitted by employers and employed alike that this had undoubtedly laid the foundation of the practical scheme which has now been adopted and will be recommended to the Employers' Federation and to all the unions in the building trade for their acceptance.

Mr. James Storrs (Stalybridge), President of the Employers' Federation, was in the chair. At the close of the Conference he made this statement to a representative of the "Daily News": "To my mind the result of to-day's Conference is very satisfactory. I think an excellent spirit has been shown on both sides in order to overcome difficulties that have been met with in the trade. The only way to solve these is by such a Parliament as we have had under consideration. The scheme is adopted and recommended for adoption throughout the country."

Mr. William Bradshaw (assistant general secretary, Operative Stone Masons' Society, Manchester), who acted as vice-chairman, said: "We are quite satisfied with the deliberations to-day. There are great prospects in the building trade, and I think we shall improve our status by this scheme. The work of this Parliament of Labour will be constructive. It will rouse a public spirit on both sides."

## ESTATE MANAGEMENT DEGREES.

Recognising the growing importance of commercial practice in the modern scheme of life, the University of London is about to make the interesting innovation of conferring scientific degrees in estate management. The economics of real property are bound to fill an important place in the general reconstruction which will take place after the war. Such questions as the housing of the people, the facilities for transit, the sanitary arrangements, and the provision of public amenities in any system of town-planning will require a scientific study based on the most approved principles of education, and it is a wise move which seeks to insure that the future technical advisers to Government Departments, Government valuers, surveyors, land management officials, municipal estate stewards, and rating experts shall be men trained on the soundest university lines. It is hardly a new departure, for the university already confers technical B.Sc. degrees in veterinary science, economics, agriculture, engineering, mining, metallurgy, and horticulture; rather is it an extension of the principle of granting university recognition to a new body of men interested in a number of complicated and technical subjects which have always been important, and which bid fair to become more so in the near future.

Details of the subjects to be included in the scheme of study are not yet available, but, doubtless, they will be bound to include land surveying, estate accounting, town-planning, the development of building estates, the valuation of land, taxation, rating and tithes, building construction, forestry, agricultural law, municipal and local government law, and urban public sanitation. The range will thus be a wide one. That the scheme has been well and fully considered is patent from the fact that the university have consulted prominent men, including Sir Howard Frank, Sir Alexander Stenning, Mr. W. H. Wells (president, Auctioneers' and Estate Agents' Institute), Mr. A. Lyon Ryde (president, Surveyors' Institute), and Mr. Courthope Munro, K.C. The importance of the scheme has already been recognised by the Auctioneers' and Estate Agents' Institute, which has allotted a sum of money to found a scholarship. The greatest interest in the new departure, however, undoubtedly lies in the fact that it is an official recognition by the university of the importance of commercial subjects, and of the claim of those engaged in commerce to have their training conducted on approved scientific lines.

## NEWS ITEMS.

### *Waterproofing a Large Reservoir.*

The 100,000-gallon reservoir at Severalls Asylum, built some time ago, has been under constant observation by the engineer owing to the fact that this was the first contract upon which he had specified waterproofed cement. The powder Pudlo was the medium utilised, and we are notified that the engineer has written to say the results are perfectly satisfactory.

### *General Specifications for Concrete Highway Bridges.*

The Imperial trade correspondent at Toronto has furnished a copy of the general specifications for concrete highway bridges in Ontario, and also a copy of a

report on the construction of highway bridges in that Province. The second-mentioned publication is in part explanatory of the specifications for steel and concrete bridges issued by the Department, and is also complementary to the series of general plans for such bridges issued annually for the convenience and guidance of municipal and other highway authorities in Ontario. British firms interested may consult the above-mentioned publications, which have been issued as appendices to the Annual Report of the Ontario Department of Public Highways, at the Department of Commercial Intelligence, 73, Basinghall Street, London, E.C.2.

### *Old Reptonian War Memorial.*

A meeting will be held at Repton on June 30 to consider the details of the Old Reptonian War Memorial Scheme, and to appoint trustees of the fund which is being raised. The scheme aims first at providing a visible memorial to the fallen, the nature of which is still to be settled, and then at establishing in perpetuity exhibitions for the sons of Old Boys, with a preference so long as the need exists for the sons of those who have fallen or suffered in the war.

### *The Roof of Westminster Hall.*

The restoration of the roof of Westminster Hall is likely to occupy several years yet. In 1912 an exhaustive examination was made of the roof by the architects of the Office of Works, and such serious mischief was found that a report was immediately presented to Parliament recommending that extensive restorative work should at once be carried out at an estimated cost of £60,000. It was discovered that the main destruction of the timbers was due to the depredations of the "death-watch beetle," assisted by the caterpillar of the goat moth, which is also a notorious wood eater. The departmental estimate of insecticide for the various timbers amounted to £1,800.

## INCORPORATED CHURCH BUILDING SOCIETY.

The Incorporated Church Building Society held its usual monthly meeting at 7, Dean's Yard, Westminster Abbey, on June 21, the Rev. Canon Edgar Sheppard, K.C.V.O., D.D., in the chair. There were also present: Lord Colchester, the Revs. G. B. Vaux, A. G. Ingram, and R. R. Powell, H. P. St. John, Esq., R. E. Bill, Esq., and the Rev. T. T. Norgate, F.R.G.S., F.R.Hist.S. (secretary). Grants of money were made in aid of the following objects: Building the new Church of St. Margaret, Scotswood, Newcastle-on-Tyne, £160; and repairing the churches at Hanslope St. James, Bucks, £50, and Anstey St. James, Wilts, £60. A grant of £225 was paid towards the erection of the new Church of All Saints, Easton, Isle of Portland.

Several applications were considered for aid towards erecting temporary mission churches and hostel chapels in certain munition areas, and a sum of money amounting to almost the total availability in the hands of the society was voted for these objects. The committee consequently appeals most earnestly for donations towards its special munition areas fund, the demands upon which are becoming most pressing, and are of national importance. These mission churches and chapels will provide full church services, and will be open for private devotion day and night.





## WAR BUILDINGS SECTION

### WELFARE ARRANGEMENTS AT A MUNITION FACTORY.

ON this and the next page we publish, by special permission of the Ministry of Munitions, some views of the welfare department at a large munition factory, the name and whereabouts of which we are not allowed to disclose. The illustrations are interesting as showing the

careful arrangements that are made for the physical well-being of the large numbers of women who have been brought by the war into the industrial sphere. The canteen, as will be seen, is a large, airy, well-lighted building constructed of timber and asbestos sheets.

The two illustrations reproduced on the following page show a cloak-room fitted with cupboards, lavatory arrangements, etc., and an ambulance room in which accidents and cases of indisposition may be promptly and conveniently receive skilled attention.



A CANTEEN DINING ROOM.

(Published by Special Permission of the Ministry of Munitions.)



## THE SHIPBUILDING PROBLEM AND THE USE OF REINFORCED CONCRETE.

Writing under the above title in the May issue of "Kahncrete Engineering," Mr. Harry C. Ritchie, Assoc. M. Inst. C. E., observes that British shipbuilders, as a class, have been more conservative in the adoption of this newer structural material in the building of their works than have those engaged in most other engineering industries. This circumstance, he says, is without doubt to be accounted for mainly by the fact that as steel designers they are more familiar with structural steel sections than with reinforced concrete. The shipbuilding industry is an old-established one, and as the English shipbuilders are probably the leaders in their craft from an international point of view, they have not had the same occasion to survey the workshop practices of other countries as has been the case with those engaged in the more modern engineering trades. The latter have seen what has taken place in America and on the Continent, and have thoroughly investigated the question of reinforced concrete construction. Profiting by this investigation, they have adopted reinforced concrete to a very liberal extent in the construction of their buildings. The automobile engineering industry affords a striking illustration.

As has been pointed out, reinforced concrete as a structural material has passed the experimental stage, and there are many examples in this country of the application of this material to marine engineering works. There are, however, many more such examples in foreign countries.

In truth, the advantages of this system of construction have firmly established reinforced concrete within the past few years as the premier structural material, and there is little doubt but that an augmented knowledge of its merits on the part of our shipbuilders will extend its adoption in the shipyard generally.

Quite apart from the general economy and adaptability of reinforced concrete as a structural material, shipbuilders should not overlook the fact that its use in most



CORNER OF AN AMBULANCE ROOM.

*(Published by Special Permission of the Ministry of Munitions.)*

work in substitution of structural steel involves a saving in steel tonnage of anything between 50 and 60 per cent., and this is surely a considerable factor in the solution of the immediate problem of increased shipping tonnage. It also affects the question of multiplying the output of our engineering industries generally, not only now but in the post-war period.

This scientific method of construction can be applied to the hulls of ships as well as to the permanent structures of the shipyard. In the early stages of such an application reinforced concrete might have some disadvantages, but these will all be overcome as the result of our experience. It has, on the other hand, many marked advantages which should not be overlooked, and which merit immediate investigation under present circumstances.

Reinforced concrete vessels in some

form or other have been in existence for many years. Barges constructed entirely of this material were built in Holland as far back as 1887, and have proved quite successful. Reinforced concrete boats of comparatively large dimensions are now being launched. Even in England this material has already been successfully employed in barge construction, and a prominent example in the writer's mind is a reinforced concrete dredging vessel which has been at work on the Manchester Ship Canal for the past four or five years, and has given every satisfaction both to master and owner. (See illustrations on page 303.)

Along the coasts and on the canals of the Scandinavian countries reinforced concrete lighters have been used for many years past, and the urgency of the shipping problem in Norway has recently led the Government of that country to permit the building of reinforced concrete ships up to 6,000 tons displacement for the North Sea traffic. The Italian Government has already made use of this material in shipbuilding. Towing barges of fairly high capacity constructed entirely of reinforced concrete have been employed by them with perfectly satisfactory results for the overseas conveyance of munitions of war. The writer understands also that they have constructed recently a type of concrete gunboat to carry heavy armament. In America, several reinforced concrete dredgers are at work on the Panama Canal, where hopper barges also constructed of this material are employed for the removal of dredgings out to sea.

The question of buoyancy has been replied to by the efficiency in this respect of the small vessels already constructed, and this particular aspect of the problem would be less objectionable in proportion to the increase in capacity. It will be of some interest to give an example of the carrying capacity of a small concrete vessel as compared with its structural weight. A reinforced concrete barge constructed in Amsterdam in 1911 is 62 ft. long, 14 ft. beam, and is divided into three compartments, the hold being 37 ft. long. The total weight of the vessel is 30 tons, and she has a cargo-carrying



A CLOAK ROOM.

*(Published by Special Permission of the Ministry of Munitions.)*



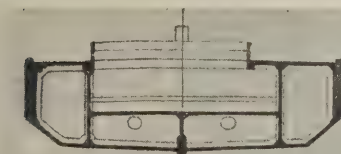
capacity of 50 tons. This example demonstrates the efficiency of even a small vessel constructed in reinforced concrete. The question of stability under varying conditions, light and laden, would in the case of this type of hull prove less critical than in the case of a steel-built ship.

The problem of transverse and longitudinal structural strength of sea-going ships could, without doubt, be admirably

solved in a reinforced concrete design. The shearing and bending moment values given by the application of the "equivalent girder" principle under the varying conditions of distribution of load and support could be resisted in reinforced concrete just as efficiently as in structural steel.

In view of the fact that there is every prospect of success in the building of

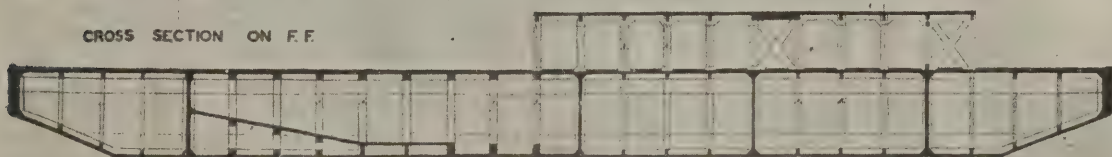
efficient sea-going ships in this material the writer pleads for a more thorough investigation of this subject. He does not for one moment suggest the entire substitution of reinforced concrete in ship construction in the place of steel. On the contrary, he would suggest that the former be used supplementarily to the latter, as even a partial adoption of this material will appreciably increase our shipping



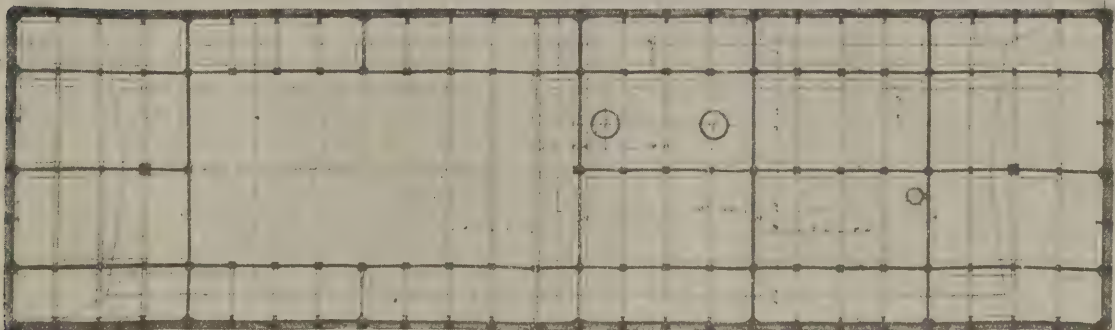
CROSS SECTION ON F.F.

## REINFORCED CONCRETE PONTOON

Scale 4 feet to One Inch



LONGITUDINAL SECTION ON D.D.



SECTIONAL PLAN ON E.E.

A REINFORCED CONCRETE DREDGING VESSEL ON THE MANCHESTER SHIP CANAL.

tonnage at an early date without interfering with the maximum output of our shipyards.

It should be borne in mind that the need for skilled labour will be reduced to a minimum where reinforced concrete is adopted for the construction of the hulls of ships. The use of this material would further produce an economy in materials essential to our national existence, and at the same time would simplify the character of the plant required. Speaking generally, the greater portion of the labour required in reinforced concrete is of the unskilled class. The materials are merely stone, sand, cement, and steel rods. The plant necessary is simply that of the ordinary building contractor, of which there is a considerable amount available at the present moment, and which could be transported and re-erected at any suitable place on very short notice.

There is no doubt whatever with regard to the economy in cost of construction. Provided a sufficient number of vessels are ordered at one time, the cost of the temporary forms required would be reduced to a nominal figure, which would become negligible as compared with the magnitude of the benefits to be obtained.

### RAPID CONSTRUCTION OF CAMP BUILDINGS.

Construction efficiency aided by civic patriotism made record work of the job of building the wood cantonments for the Officers' Reserve Corps Training Camp somewhere in the U.S.A. On April 20 Major Edward S. Walton, commanding officer of the 17th Infantry, received instructions from the War Department to begin immediate construction of the reserve officers' training camp to accommodate 2,500. Simultaneously with the preparation of bills of material and the selection of a site for the camp in a certain park, contractors and dealers in lumber and building material in the district were notified of the impending construction and urged to co-operate. The Manufacturers' Association, the Chamber of Commerce, the Builders' Exchange and the Engineers' Club of the town responded to the call, and in a mass meeting held for the purpose determined to combine all local resources and assist the Post Commandant in getting the job done on time. It will be seen from the following record that this object was virtually if not quite literally accomplished, all the buildings having been completed by May 9. The time limit for completion was set for May 7. Analysis of contractors, bids received Saturday afternoon, April 21, indicated that the job could be best handled by one general contractor for the building work and allotting the roofing, plumbing, and lighting to dealers and small contractors. The award for the building construction was placed with the T. S. Mondy Co.; T. W. Knight was employed by them as general superintendent.

The camp lies about ten miles or so from the nearest point of material supply. The route of delivery was over good pike roads. All material used in building operations was transported from the city to the camp by motor trucks.

On Saturday night, April 21, the lumber yards, the various dealers in building material and the labour organisations were advised what would be expected of them, and on Sunday, while the work was being laid out, over 110,000 ft. of lumber

was delivered to the job. The work as then contemplated consisted of eighty-one buildings, made up as follows: Fifteen barracks, each 20 by 245 ft. in plan; fifteen kitchens, each 20 by 28 ft. in plan; fifteen mess halls, each 20 by 84 ft. in plan; sixteen bath houses, each 9 by 28 ft. in plan; sixteen latrines, each 9 by 35 ft. in plan; one hospital, 20 by 126 ft. in plan; one administrator building, 20 by 98 ft. in plan; two storehouses, each 20 by 56 ft. in plan.

The rate of progress was such that daily delivery of lumber amounting to 100,000 ft. was erected as fast as delivered. Extreme difficulty was encountered in obtaining the grade and amount of flooring and boxing required, but the lumber yards of nearby towns were combed to obtain it and delivery was accomplished by motor truck.

All structures were under roof within nine days of the start of the work and the original order was practically completed in twelve days. Additional building units such as officers' quarters, officers' mess, negro bunk and mess houses, hand baggage and trunk storage, quartermaster depot, garage, stables, bath houses and latrines, were added from time to time during the original construction period. All of the 136 buildings were completed May 9. While this feat is regarded as an achievement for which the township may well be proud, it was made possible by the thoroughgoing and practical manner of handling the work by Major Walton and his staff, for the army officers, and by Mr. Knight for the contractor.

### LEGAL.

#### Builders' Contract : Time.

*Higgins v. Mayor, etc., of Northampton.*

June 20. King's Bench Divisional Court. Before Justices Bray and Avory.

This was a motion by the plaintiff to set aside a judgment of the Official Referee.

Mr. Macnaghten, in support of the motion, said the plaintiff sought to recover from the corporation £162 10s. 8d. balance alleged to be due to him under a contract for widening a bridge for the corporation. It was admitted that the balance claimed was the amount due under the contract, but the corporation raised this defence, "that you did not widen the bridge within the time specified in the contract." That was admitted, and under the contract the plaintiff was liable to a penalty of £10 a week for each week during which the work was uncompleted, and the corporation's surveyor said that extended to fourteen weeks, and therefore under the contract they were entitled to deduct the sum of £140 from the plaintiff's claim, and that £22 10s. was all the plaintiff ought to have. Mr. Pollock took this view, and it was from this that the plaintiff now appealed. Counsel argued that on the true construction of the clauses of the contract the corporation had no right to deduct the amount, as the work was extended "owing to circumstances over which the plaintiff had no control," viz., that the plans were not handed to him till weeks after he should have had them. This was a breach of the defendants' obligations and extended the time for the completion of the work over which plaintiff had no control.

The Court, without calling upon Mr. Clavel Salter, K.C., M.P., for the corporation, dismissed the motion with costs.

Mr. Justice Bray was of opinion that

the appellant failed on both points he had raised. There was no ambiguity about the clause at all.

Mr. Justice Avory concurred. The judgment of the Official Referee was right.

### THE R.I.B.A. RECORD OF HONOUR.

The following list (the forty-fourth) is taken from the R.I.B.A. Journal for June:—

#### *Fallen in the War.*

Clark, Captain Walter Llewellyn, Royal Flying Corps (A. 1914). Killed in action.

Gaskell, Lieut. Reginald Robinson, Royal Flying Corps (Probationer). Accidentally killed whilst flying for his pilot's certificate. Only son of Mr. Peter Gaskell, of Hull (Licentiate).

Beville, 2nd Lieut. Alfred Geoffrey, Queen's Westminster Rifles (Probationer). Killed in action, Easter Sunday, 1917. Aged twenty.

#### *Wounded and Missing.*

Taylor, 2nd Lieut. Herbert Samuel, Oxford and Bucks Light Infantry (A. 1914). Reported wounded and missing May 10, 1917.

#### *Members' Sons Killed.*

Colcutt, Lieut. Philip Martin Blake, East Yorkshire Regiment. Killed in action on May 12. Younger son of Mr. T. E. Colcutt, Past President.

Gotch, Captain and Adjutant Roby Myddelton, Sherwood Foresters. Wounded and missing on July 1, 1916, now believed killed. Only son of Mr. J. A. Gotch, F.S.A., Vice-President.

#### *Military Honours.*

Fetherstonhaugh, Staff Captain H. L., Canadian Corps (A.). Awarded the Military Cross.

#### *Serving with the Forces.*

The following is the Forty-third List of Members, Licentiates, and Students R.I.B.A. serving with the Forces, the total to date being seventy-four Fellows, 520 Associates, 315 Licentiates, and 295 Students:

#### ASSOCIATES.

Bee, Thomas J., R.N.A.S.  
Hanson, G., Inland Water Transport R.E.

#### LICENTIATE.

Williamson, John, Royal Garrison Artillery.

#### STUDENT.

Rankin, T. G., R.N.A.S.

#### *Promotions, Appointments, etc.*

Rhind, Brigade-Major T. D. (A.), promoted to Lieut.-Colonel on the Staff.

Tasker, Captain W. W., R.E. (A.), promoted to Major.

Fetherstonhaugh, Lieut. H. L. (A.), promoted to Staff Captain, Canadian Corps.

Sands, Hubert C. (A.), promoted to Lieut. and O.C. Sanitary Section, R.A.M.C.

Sewell, 2nd Lieut. R. V. T. (Licentiate), promoted to Lieut., R.E.

Ledger, Chief P.O. Godfrey H., R.N.V.R. (A.), promoted to 2nd Lieut., R.F.A.

Kruckenbergh, Private F. L., R.A.M.C. (A.), promoted to 2nd Lieut., R.A.M.C.

Webster, Lieut. F. Coutts (A.), promoted to Captain.



## ELECTRICAL NOTES.

*Indirect Lighting.*

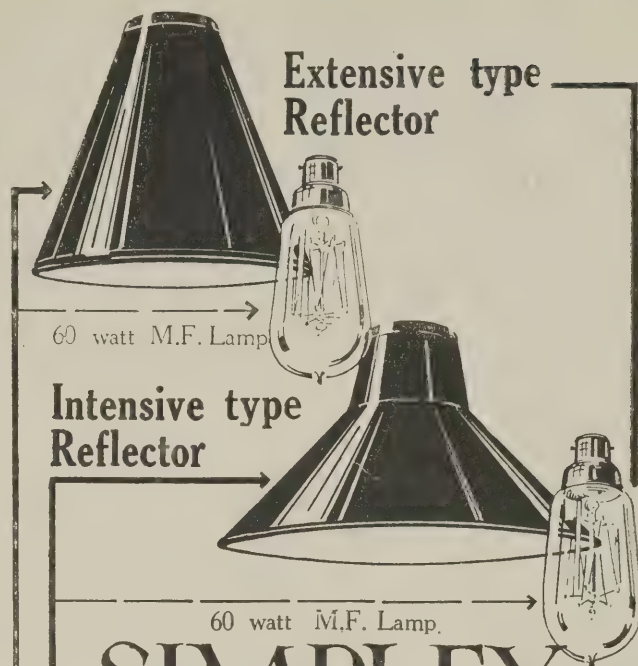
A good example of this form of lighting has recently been completed at the King's Hall, Southall, by the Sun Electrical Company, Ltd., Charing Cross-road, W.C. The hall is a new building, and serves not only as the headquarters of the Southall Wesleyan Mission, but is to be used also for concerts, meetings, etc. It was designed by Messrs. Gelder and Kitchen, and differs from the conventional hall in several respects, in that it is something between the auditorium of a theatre and a Continental House of Parliament. The general style of the domed roof affords ample opportunities for successful indirect lighting, and these have been taken full advantage of. A central fitting, comprising a 36-in. metal bowl, fitted with a "Sunlite" mirror reflector, and four 500-watt "half-watt" lamps are suspended from the dome. This fitting throws upwards some 4,000 candle-power, which is sufficient to light the hall itself and the first three rows of the gallery by reflection from the ceiling, a cubic area of about 85,000 cubic feet. The gallery is also lighted independently by light 10-inch bowl fittings, each provided with a 200 candle-power "half-watt" lamp, and lighting altogether some 25,000 cubic feet. Under the gallery are suspended eight 14-in. bowl fittings of similar lighting capacity, whilst two fittings of the same size, but of twice the lighting capacity, are used for the choir and orchestra. The various rooms attached to the hall are provided with indirect lighting bowl fittings to the extent of three 24-in., with 300 watt lamps, twenty-one 14-in., with 200 watt lamps, and twenty-two 10-in., with 100 watt lamps. All the lamps are of the gas-fitted or "half-watt" type, and the illumination is as near perfect as possible, without glare or shadows and approximating closely to daylight in quality.

*G.E.C. Novelties.*

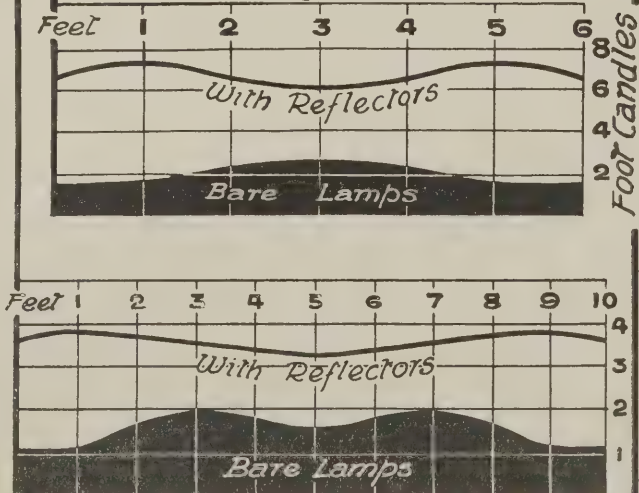
The General Electric Co., Ltd., have always something new to announce, whether it be push-buttons or turbo-generators. In common with many other electrical manufacturers, they have catered for the lighting restrictions by introducing a series of cardboard shades with special features, which will meet the police requirements without cutting off more light than is absolutely necessary. The General Electric Company's new series of shades, instead of being fixed to the lampholder, are supported by cords which are tied to the flexible wire above the lamp at a height which may be necessary in each case to give the desired result. There are various shapes and sizes to meet all conditions. Some are provided with a wide collar, shallow towards one side and deep towards the other, so that the room will obtain all the benefit of the light at the expense of the windows, or these specially shaped collars may be obtained separately for fixing on to shades of other patterns. The latter are conical, of different angles, and they are all supplied in various tints.

The same makers send us some particulars of their "Witton" primary cells. Those people who are always complaining that their electric bells are out of order should sometimes inquire into the kind of battery that the builder has provided, because there is no greater source of trouble in this connection than a poor, cheap form of Leclanché cell. In the G.E.C. type it is claimed that the greatest care is taken in the selection of materials and the workmanship of the porous pot. The cells are made in three sizes, ranging in capacity from 8 to 40 ampère-hours. These cells have rod zincs, but a circular zinc is provided in the pattern developed for railway work, lowering the internal resistance and therefore allowing of heavier duty. In another pattern, known as the Witton Carsak cell, also used for railway work, the porous pot is replaced by a canvas sleeve or sack containing the mixture of carbon and manganese dioxide in the form of a compressed block. This cell is made in seven sizes, three of which correspond to the standard sizes of porous pot cells. The capacity of these cells ranges up to 175 ampère-hours, and weight for weight, the capacity is from two to three times that of the corresponding size of standard cell.

The G.E.C. type of dry cell has been designed, as the result of much experience, to meet the trade requirement of absence of deterioration in stock. This is especially important for export orders, and satisfactory results are guaranteed in this respect. The cell is made in eight different sizes, each giving 1.5 volts and capacities ranging from 5 to 120 ampère-hours. A cheaper form, with somewhat lower capacity, intended for general work, is the "Century" dry cell, and for hot climates which are detrimental to the ordinary types a special cell known as the "extra sec" is provided. Here the electrolyte is in a dry form, and remains inactive until the cell is filled up with water. This cell will keep in stock for an indefinite period, but its capacity is slightly lower than the ordinary type.



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## PUBLIC WORKS AT BIRMINGHAM.

The Public Works Committee of Birmingham City Council report that, in conjunction with the Lighting, Stables, and Refuse Disposal Committee, a purchase has been effected of the brickworks and land, Grove Road, King's Heath, at the sum of £1,800. The area of land acquired, which is freehold, is 8 acres, 1 rood, 25 perches, and the purchase includes various buildings, drying sheds, fixed and loose machinery, plant, and stock. The chief value of the property to the Corporation is in the large claypit, which, it is estimated, will hold at least 200,000 cubic yards of material, and so provide an excellent and convenient tip for house and street refuse. It has been arranged that the purchase price of the property and the income derived therefrom shall be equally divided

between the Public Works Committee and the Lighting, Stables, and Refuse Disposal Committee, and that their departments shall have joint use of the property. It is believed the purchase of the property will be of considerable advantage to the Corporation both for tipping and road improvement purposes, apart from its site value, and the two committees recommend that their action be approved and confirmed.

The committee are advised the condition of a length of the Hockley main sewer is giving rise to serious apprehension. The sewer is egg-shaped, 5 ft. 9 in. by 3 ft. 6 in., and unfortunately is in parts threatened with collapse. It is essential that the length between Avenue Road and a point about eighty yards below Thimble Mill Lane should be forthwith reconstructed. Detailed estimates of the works immediately necessary are in course of preparation, and these will probably amount to about £12,000. It is impracticable to take any action to obviate this expenditure, and in the circumstances the committee recommend that, subject to the sanctions of the Ministry of Munitions and the Local Government Board being obtained, they be authorised to carry out the necessary works of reconstruction, and the Finance Committee instructed to borrow the amount sanctioned.

Considerable development has taken place in the neighbourhood of Drews Lane, Washwood Heath, by the erection of large factories. To meet the needs of the very heavy traffic in connection with these works it has been incumbent upon the Public Works Committee to undertake considerable widening and improvement works in Drews Lane, in respect of which a claim has been made through the Road Board to the Government. The total amount estimated to be required to cover the cost of

the works proposed to be carried out is £7,481, towards which the Government are prepared to pay the sum of £1,000. As the result of negotiations with the Road Board, the Board have agreed, subject to the sanction of the Treasury, to lend to the Corporation from the Road Improvement Fund free of interest the balance of £6,481, the repayment of which is to be spread over five years. It will be necessary for the Council to obtain the sanction of the Local Government Board to the borrowing of this amount, and, in view of the importance and urgency of the road works, the committees recommend that they be authorised to carry them out.

Conditions brought about by the war having led to a cessation of executive work in connection with large schemes, advantage has been taken of this to carry out a reorganisation in the administration of the Public Works Department. For this purpose the city has been divided into three administrative divisions, known as the Central, Western, and Eastern Divisions, and each of these has been placed under a chief surveyor. It is hoped that as a result of this reorganisation, increased efficiency in the working of the department will be attained, and the city surveyor relieved of the constant attention to detail administration which has hitherto engaged a considerable proportion of his time. In this connection the committee draw attention to the fact that owing to the scarcity of labour and the impossibility of securing materials, a considerable number of the roads of the city are falling into a bad state of repair, and some day a large expenditure will be required to bring them up to modern requirements.

During the past summer 247 miles of streets have been tar-sprayed, as compared with 177 miles sprayed in 1915. In selecting the macadamised streets to be tar-sprayed preference was given to the motor-omnibus routes and main roads, and to the poorer class of streets where the houses are built right up to the side of the street. Of the last mentioned class 405 streets were treated.

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## NEWS ITEMS.

*London Improvements.*

The London County Council has applied to the Local Government Board for an Order to extend for one year from August 7 next the time-limit for the compulsory purchase of land in Piccadilly and Arlington Street for street improvement purposes.

*Architect as Canon.*

The Rev. Canon James Edwin Truman, Vicar of St. Andrew's, Lincoln, who has died at Lincoln, was a native of Nottingham, and after being for some time an architect in that city, studied for the Church, and was ordained deacon in 1883 and priest in 1886.

*Irish Architectural Association.*

At a meeting of the Architectural Association of Ireland, at the Association's rooms, South Frederick Lane, Dublin, Mr. G. Atkinson, R.H.A., delivered a lecture on "British Furniture Style." The lecture traced the history of the chair from 1660 to 1760—a period during which English furniture reached what was probably its highest artistic development.

*The Star and Garter Home.*

It is announced that the new Star and Garter Home, Richmond Hill, will be built of grey brick instead of red as at first planned. The designs provide for a building of five storeys, the centre of the building to be six storeys high, and accommodation will be provided for 250 bedrooms. The block will cover an acre—one-half of the site.

*Drawings of the Western Front.*

The original drawings recently made by Lieut. Muirhead Bone on the Western Front will be exhibited at the galleries of Messrs. Colnaghi and Obach, 144, New Bond Street, W., from January 24 onwards. The profits of the exhibition will be devoted to public funds. These drawings will pass into the possession of the British Museum and have been accepted by the trustees as a permanent record of incidents of the war.

*Birmingham Town Planning Committee.*

Councillor George Cadbury, jun., has been elected chairman of the Town Planning Committee of the Birmingham City Council, in place of Alderman Neville Chamberlain, who has resigned on his appointment as Director-General of National Service. A resolution was passed placing on record the committee's appreciation of the valuable services rendered by Alderman Chamberlain as chairman of the committee since its formation in November, 1911, and in the work of town planning Greater Birmingham.

*Building Plans in Urban Districts.*

Returns received from ninety-three of the principal urban districts in the United Kingdom (exclusive of the County of London), giving the estimated cost of the buildings for which plans were passed during the fourth quarter of 1916, show that there was a large decrease (£986,180, or 42.2 per cent.), as compared with the corresponding period of 1915. The population of the districts included in the Returns is over 12,000,000. Compared with the corresponding period of 1915 there was a decrease in the value of all classes of buildings, the most marked being in churches, schools, and public buildings (81.9 per cent.), in dwelling-

houses (78.6 per cent.), and in shops and other business premises (57.8 per cent.). There was an increase in the Yorkshire district (13 per cent.), but every other district showed a decrease, which was most noticeable in Northern Counties (74.6 per cent.), other districts in England (68.1 per cent.), and Midlands (56.2 per cent.).

*Midland Builders.*

At the annual meeting, held in Birmingham, of the Midland Centre of the National Federation of Building Trades Employers, the officers for 1917 were appointed as follows: Mr. Charles Garlick (Coventry), president; Mr. G. Elvins (Birmingham) and Mr. F. G. Hodges (Burton-on-Trent), vice-presidents; Mr. H. Willcock (Wolverhampton), treasurer; and Mr. Charles Cockerell (Rugby) and Mr. William Moffat (Birmingham), auditors.

*Glasgow's Architecture.*

Mr. John Keppie, F.R.I.B.A., in a lecture on "Glasgow Architecture," delivered to the Technical College Architectural Craftsmen's Society, Glasgow, gave a review of the general plan of the city, old and new, and pointed out portions which might be improved and some sections which might be better utilised than at present. Comments were made on the general character of the architecture of the city and the various architectural conceptions which dominated it. The particular work of certain architects who have left their mark on the city was critically examined. The brothers Adam, Stark, Sir George Gilbert Scott, "Greek" Thomson, John Burnet, sen., James Sellars, John Honeyman, and others were referred to.

*What London Public Buildings Cost.*

The cost of some of London's public buildings is given in an account issued last week: Public Offices (Whitehall site), £1,229,148; Public Offices (Westminster site), £2,101,831; South Kensington Science and Art Buildings, £901,444; completion of Admiralty, including extension (in addition to a net sum of £382,770 expended from Parliamentary grants), £351,441; Post Office Buildings (Queen Victoria Street and West Kensington), £334,253; Patent Office extensions, £86,433; British Museum extension, £160,028; Home Office Industrial Museum, £16,779. The total authorised issue under the various Acts was £5,890,000.

*Housing War Workers.*

The report of the Comptroller and Auditor-General on the account prepared under the provisions of the Housing Act, 1914, for the period ended March 31, 1916, issued last week, shows that the total authorised issue from the Consolidated Fund is £2,000,000. During the year £20,700 and £724,000 was issued to the Local Government Board, Scotland, and the Commissioners of Works respectively, making, with a previous issue, a total of £844,700. The Local Government Board, Scotland, entered into an agreement with the Scottish National Housing Co. Ltd., an authorised society, for the erection of dwelling houses suitable for occupation by persons employed by the Admiralty at Rosyth. The Board provides by way of loan to the company, as the work proceeds, nine-tenths of such expenditure as is properly debited to the capital account of the company. The loans are secured by a cash credit bond, and the repayments will be spread over a period of sixty years. The expenditure by the Commissioners of Works on the Woolwich Housing Scheme

amounted in the year to £776,054—of which £700,603 was expended on the erection of buildings—making the total expenditure on the scheme to March 31, 1916, £806,660.

## MODERN VENTILATION.

Many are the inventions that have been devised for the aeration of buildings, and it is the main object of this manual to show how some of them may be intelligently applied. Special attention is given to public buildings, because the average dwelling, with its small apartments, has no need for elaborate apparatus and systems, windows and fireplaces sufficing. Places of public resort or assembly, however, would propagate disease wholesale if they were not provided with effectual means of rendering their contained air inoffensive, innocuous, and of a comfortable temperature. Various methods of achieving the desired result are described and copiously illustrated in Mr. Grierson's book, which is equally useful either as an introduction to the principles of ventilation or as a guide to the choice of apparatus. A chapter on heaters is naturally included.

"Some Modern Methods of Ventilation, with Special Reference to Public Buildings." By R. Grierson. A.M.I.E.E., etc. With Illustrations, Charts, and Tables. Pages xv. + 188, price 8s. 6d. net. London: Constable & Co., Ltd., 10, Orange Street, Leicester Square, W.C.

## MERTON ABBEY TO BE PRESERVED.

A portion of the old walls of Merton Abbey has recently passed into the keeping of the National Trust. The surrounding walls are practically all that remain of the once great priory, and though they have perhaps changed little in appearance for some centuries signs are not wanting that without some careful guardianship they might soon be demolished and disappear. The walls have been purchased by the River Wandle Open Spaces Committee, a body formed for the purchase from time to time of strips of land on the banks of the river to save its amenities.

The Priory of Merton was built in 1115 by the Austin Canons under Gilbert the Norman on land given by Henry I. The first building—of timber—was near to Merton Church, but a few years later (1130-1136) the priory was built in stone on the present site, a mile eastward, the outer walls enclosing an area of some sixty or sixty-five acres of marshy land, bounded and intersected by the streams of the Wandle. The prior was a mitred abbot with a seat in Parliament. In the course of its history several notable events took place. Here peace was concluded between Henry III. and France, here Hubert de Burgh sought and found refuge, and here the famous Statutes of Merton were passed at a meeting of Parliament in 1236. Here Thomas à Becket was educated, and from Merton, too, came Walter de Merton, twice Lord Chancellor, and founder of Merton College.

The priory was dissolved in 1538, and it has been so freely used as a quarry for subsequent building that practically all of it but a few fragments of walls and a single rude Norman doorway have disappeared. The late William Morris took over some old mills at this point for the manufacture of silks and tapestries.



## PROFESSOR ABERCROMBIE ON THE RE-PLANNING OF DUBLIN.

The Reconstruction of Dublin was discussed at a meeting of the Town Planning Institute, held recently in the offices, 92, Victoria Street, S.W.

The proceedings were opened by Professor Patrick Abercrombie, the successful competitor in the Dublin town planning competition.

Professor Abercrombie first referred to the housing problem, which involved as an urgent requirement the rehousing of at least some sixty thousand people, and the new dwellings for these people in a remodelled Dublin should be provided mainly in new suburbs in the districts of Crumlin and Cabra. It was proposed that these areas should be connected with the centre of Dublin by wide avenues, a proposal which was feasible in Dublin because of the existence of a lot of property in a decaying condition which might be easily demolished. The geological formation of the valley of the Liffey suggested a scheme of linking up the different railway termini by underground railways. One would run from the Broadstone to Amiens Street, another from Westland Row to Amiens Street, and a third from Westland Row to Kingsbridge. The loop-line could then be dispensed with, and a source of the disfigurement to the city got rid of. The system of thoroughfares could also be remodelled. Many of the roadways radiate towards the suburbs like the spokes of a wheel, but they do not come to a common centre. The proposal is that they should be continued towards the centre and meet in a large open square in the Ormond Market district, which would then become the traffic centre of the city instead of O'Connell Street.

There should also be at this point a central station for the underground railway system, which would here go under the river. The railway and tramway centres would then be at the one spot. In Professor Abercrombie's opinion, the housing problem in Dublin is a national question which should be dealt with by the Government, and he thought that the Corporation, instead of proceeding with a number of isolated housing schemes on a small scale, might consider the postponement of such schemes until they saw whether these traffic improvements which he indicated could be effected in the first instance.

At the conclusion of his address, Professor Abercrombie showed a number of lantern slides, which gave details of the different proposals for the reconstruction of Dublin. Provision was made for a new Catholic Cathedral near the King's Inns and looking down Capel Street; a national theatre near O'Connell Street, and Legislative buildings, if required, to be constructed by remodelling the Bank of Ireland. Another suggestion was that the grounds of the various barracks should be transferred into little parks for the public, the necessary accommodation for the troops displaced being provided by an enlargement of the barracks near the Phoenix Park. The banks of the Dodder, the Tolka, and the two canals should be transformed by the addition of all available adjacent pieces of land into attractive public walks or parkways, and care should be taken in the building of the new suburbs which would accommodate the working classes and other sections of the population to avoid a standardisation of design that would lead to monotony.

### DISCUSSION.

In the ensuing discussion, Mr. H. V. Lanchester said that Professor Aber-

crombie's proposals with regard to Dublin marked the highest development that had yet been reached in the matter of town planning in the United Kingdom. He hoped that in a large measure the scheme would be brought to practical fruition.

Professor Adshead emphasised that the town planning of Dublin, as of all other places, should be developed in stages. Town planning of this magnitude must be considered as an organic growth. It was not prudent to attempt to suggest a scheme complete in all its details. All that should be attempted was to construct an organisation that would grow in stages. The neglect of this principle in many town planning schemes had proved to be a great defect.

Mr. Ashbee said that when in Dublin he had heard a good deal of what the people there had to say. When the drawings of the various competitors were being examined one of the city magnates said that if the various proposals were the most perfect in the world they would never be adopted in Dublin. The real difficulty there was political and social. He had struck that difficulty when trying to evolve a solution of the housing question. The Corporation were elected by the votes of the working classes in the tenements, and unless there was some complete change they would not consent to the transfer of these votes from the central districts to the suburbs. Another proposal which he had heard criticised in Dublin was the suggested linking up of the railways. It had been said, "What is the good of doing that? No Belfast man will ever want to go to Cork."

An exhibition relating to this subject was opened in Dublin on January 22, and during the course of the exhibition Professor Abercrombie will deliver an address dealing with the reconstruction of Dublin.

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## ELECTRICAL NOTES.

*A New Unit of Light.*

Besides munitions of war and other similar substantial things, America exports abstract things (including, of course, Peace Notes). A recent exportation of this class is a new unit of light, which has been called the "Lumen," and for which there is a good deal to be said. It is impossible in these notes to give a long dissertation on the pros and cons of the lumen, because the subject is somewhat abstruse; but a few words can be said as to its origin and use. As nearly everyone knows who has to do with electric lamps, their efficiency is expressed in terms of "watts per candle-power," but few people know what candle-power means. As a matter of fact, to the lampmaker it is the average of mean light in a horizontal direction compared with a known standard of light—actually, therefore, efficiency is watts per mean horizontal candle-power. Now, lamps of different shapes and makes have differently shaped filaments, and therefore a comparison such as mean horizontal candle-power is not always a correct criterion of the total light given out by lamps of different kinds. On the other hand, if the candle-power is measured against a known standard of light in all possible directions, the average of these measurements gives the "mean spherical candle-power," and the objection is removed. This value is, however, not always a convenient one for commercial use, although it bears a definite relation to the total emission or "flux" of light from the lamp.

It is found that a more convenient unit to express the relative light-giving capacities of lamps is the unit of luminous flux, which has been defined as giving an illumination of one foot candle per square foot at one foot distance. This unit is called the lumen, and this being divided by watts we get the new unit of efficiency, namely, "lumens per watt." The actual relation between lumens and mean spherical candle-power is 12.56 to 1, and with the more usual shapes of lamps, such as Mazda, the lumens emitted are about ten times the mean horizontal candle-power. This is the theory of lumens, and it certainly makes out a fairly good case, if only the contractors will accept it. It does not really matter very much what the public think about the matter, but it is obvious that if all lamps are rated in lumens then, no matter what make or shape one buys, it will always be possible to assure oneself that one is getting a certain definite amount of light from a lamp in comparison with any other lamp. As to how this light is used, obscured or absorbed, this is another matter for which the lampmaker is not responsible, but only the user. As lamps are rated at present, candle-power, as a unit of comparison, is quite fallacious.

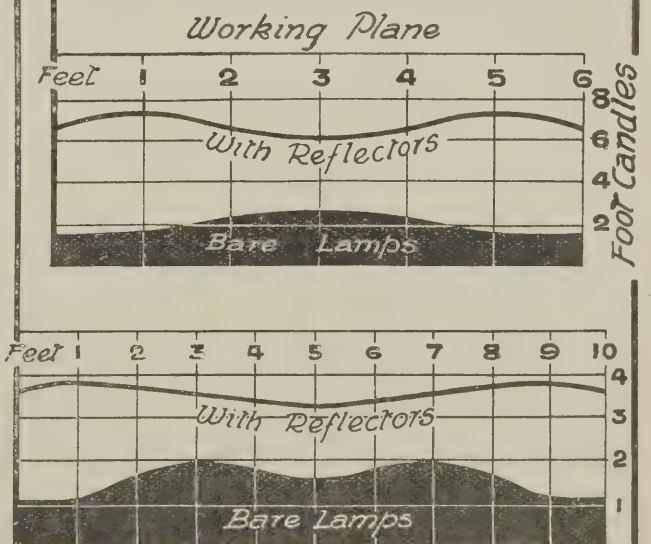
*A New British Cable Works.*

Before the war, the General Electric Company, Limited, and Messrs. Pirelli and Co., of Milan (the well-known cablemakers), formed a joint British company to manufacture electric wires and cables in this country, and erected a works at Southampton. Of course, the war to a large extent retarded the full development of these works, but a brochure which has now been published gives some idea of its scope and potentialities. Cable-making machinery has seen many changes, and these works being quite new the latest and most efficient types of machines could be laid down, and everything was arranged on the most up-to-date lines with a view to economical manufacture. The works have a private pier on the water, which is equipped with an electric 10-ton crane. An overhead electric mono-rail system is capable of carrying loads up to 7 tons to all parts of the works. At present only one-third of the company's land is built upon.

The ground floor is occupied by the heavy machinery, including the plant for rubber washing, cleaning, and calendering, the lead presses, vulcanising and testing tanks, and the stranding and covering machines, as well as the stores. The first floor is employed for making smaller wires and cables for electric lighting, and wires for bells, telephones and telegraph instruments, and wiring. There are also the necessary stores, offices, and a repair shop equipped with machine tools capable of making new machines for future use. To return to the ground floor, the cable machines here are of such capacity as to lay up as many as 450 wires in one cable, and to turn out cables up to 1,500 sq. mm. section, and all the usual forms of insulation and armoring can be effected. The testing-rooms are fitted with the most recent apparatus for research, etc., and test pressures are provided up to 300,000 volts alternating current, which is generated by a "Witton" alternator and stepped up by transformers. The instruments include a Jona electrostatic voltmeter, with a range of 200,000 volts. All the machinery is driven by "Witton" motors from the corporation mains, and the works are lighted throughout with Osram-Atmos (half-watt) and Osram lamps. The cable-drying chambers are supplied with steam from a special boiler-house, and the lead furnaces are fed with gas from two producer plants.



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# LATE CONTRACTS, ETC.

## PAINTING.

February 8.—**PAINTING.** Wigan.—Painting of certain properties for the Corporation. Particulars from A. T. Gooseman, Borough Engineer, King Street, West.

February 13.—**CLEANING AND PAINTING.** Leeds.—Cleaning down, painting, etc., at various police stations in the city. Particulars from W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

## ROADS, CARTAGE, etc.

February 7.—**MATERIALS.** Bradford.—Supply and delivery of the following for the Corporation: Road metal;

cement; pitch and oil required for street paving purposes; cast-iron gullies, ventilators, and storm grates; glazed earthenware pipes, blocks and junctions; timber for sewerage and other works. Particulars from W. H. S. Dawson, City Engineer and Surveyor, Town Hall, Bradford.

February 10.—**GRANITE.** Hemel Hempsted.—Supply of granite for year ending March 31, 1918, for the Corporation. Particulars from W. R. Locke, Borough Surveyor, Town Hall, Hemel Hempsted.

No date.—**ROAD METAL.** Milngavie (Scotland).—Supplying and spreading road metal within the burgh during the current year, for the Town Council. Particulars from T. M'Intyre, Burgh Surveyor, Milngavie.

## ENGINEERING.

No date.—**HEADING.** Cross Keys (Mon.).—Driving a hard heading at the Nine Mile Point Colliery. Particulars can be obtained at the Colliery Offices, Cross Keys, Mon.

## MISCELLANEOUS.

February 12.—**MATERIALS.** Beckenham.—Supply of the following for the Beckenham Urban District Council: Brooms and brushes, cement, disinfectants, flints (pit), gravel and sand, granite, ironwork, oils and colours, tar-paving, and timber. Particulars from the Council Offices, Beckenham.

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## REINFORCED CONCRETE SHIPS.

THE necessity for a greatly increased shipbuilding programme, to counter the loss inflicted on our mercantile marine by the U-boat pirates, has brought before the public the question of constructing ships of reinforced concrete, whereby, it is contended, a vast saving in steel would be effected and an increased rate of output obtained. The idea of using reinforced concrete for shipbuilding is, of course, not a new idea—more than fifty years ago, in fact, reinforced concrete boats were built in Italy, while in more recent times there have been many other similar experiments, on a larger scale, in this country, in France, Germany, Norway, and elsewhere; but, with the exception of certain enterprises in Norway, we believe the system of construction has not embraced vessels of large size. Barges and pontoons have been the biggest attempts. In Norway, however, vessels of 1,000 tons and more (one report refers even to a vessel of 5,000 tons) have, it is stated, been built of reinforced concrete, and on the assumption that the results have been satisfactory it is not surprising that at the present time a fresh interest should be aroused. The "Observer," we notice, in its issue for February 11, published an interview with Mr. John Cameron Grant, who speaks of the construction of reinforced concrete ships as presenting no intrinsic or inherent difficulty. "It is merely a question of organisation and careful supervision. The strength, buoyancy, rapidity of construction, as well as the saving of steel plate, and the general economy, including the possibility even of the entire use of female labour, lend to the project sufficient merit, in my opinion, to call for immediate consideration."

We, ourselves, have a particular interest in this development of the use of reinforced concrete, inasmuch as we may claim, with some degree of pride, to have been the first journal in this country to devote serious and extended attention to a form of construction which, although looked at askance when it was introduced, now takes a foremost place.

The use of reinforced concrete for shipbuilding is in its infancy, but there would appear to be vast extensions possible, more particularly as the conditions of the present time place a new value on any form of construction that will conserve steel.

Information on the subject is meagre, and the greater interest therefore attaches to the following extracts from an article by Mr. Carl Weber in the latest issue to hand of the "Contract Record," of Toronto:

Not only for the construction of smaller vessels is concrete an entirely suitable material, but also for large ocean-going ships will its use be perfectly safe and extremely advantageous.

The principal faults of all previous attempts at concrete-ship construction have been that concrete builders tried to use everyday methods and means in design and in mixing and applying the materials. Most of these vessels were built of ordinary concrete mixed and placed in the common way. The special requirements of ultimate service were not sufficiently taken into consideration. The designs were made without consultation with marine engineers, and the strains which the empty and the loaded ship had to resist under all the different and changing conditions were only more or less intelligently guessed at.

In spite of all this, however, satisfactory results have been obtained in most cases,

and therefore the subject is worthy of careful consideration and encouragement, especially at this time, when the production of cargo ships is one of the greatest problems of all nations.

### *Two Methods of Construction.*

So far two methods have been used for the construction of concrete barges:

The first method consisted in building an inside and outside form for the ship's hull, and between these forms (which were separated to allow for intended wall thickness) the necessary reinforcement was placed. Then a concrete, composed of Portland cement, sand, and crushed stone or gravel, was poured in a semi-liquid condition to fill the forms and encase the steel reinforcement. After the concrete had sufficiently hardened, the forms were removed and the barge was finished by pouring bulkheads, division walls, decks, etc., in a similar manner.

This method resulted in extremely clumsy and heavy vessels, which can only be used for sand and construction barges. The ship itself is unelastic and in collision with wharfs and other vessels dangerous cracks develop which are difficult to repair and which will often result in entire loss.

The second method consists in using a light steel skeleton, placing over the outside of it an expanded metal or wire fabric and finishing the hull by plastering over this sheathing a rich mortar coating in the same manner as light curtain and partition walls are formed in fireproof building construction. This method is a great improvement over the first one, but can only be used for smaller boats, launches, etc., and, of course, is practically out of the question for cargo barges.

### *A New System.*

I have invented and developed a series of entirely new methods of construction which not only solve the problem in a scientifically correct manner, but allow the building of large and small concrete vessels of remarkable elasticity and of comparatively light weight. In addition to this, the cost of construction is greatly reduced because no forms are required. All concrete is handled, applied, and finished by machinery especially designed for the purpose, and the risk of poor workmanship is almost completely eliminated.

Owing to the present international patent situation, I am not able to publish complete details of construction. I may, however, give a general indication of the methods employed in my systems.

The ship's hull consists of a strong framework of steel, which is so designed that the combined strength and advantages of steel and concrete are fully recognised. This truss frame is erected and riveted in the ordinary manner. In the completed ship the steel frame is entirely encased in concrete and thereby protected against rusting. By this encasing the steel members are also stiffened and the buckling stresses are greatly reduced. For this reason the steel members of the frame are of simple design and relatively light weight.

After the steel frame is completed it is covered with my multi-unit wall construction of varying thickness. The walls are formed of a high-grade concrete applied by compressed air, and each section is independently reinforced by networks of light steel bars and wire mesh. All ship walls, bulkheads, decks, and partitions are formed in a similar manner without the

presence of any construction or connection joints, so that the completed ship is one seamless, monolithic structure.

The concrete is composed of Portland cement and crushed quartz or other suitable stone material. All pieces not passing a  $\frac{1}{2}$ -in. screen are rejected. These materials, with the necessary waterproofing medium and the water for proper hydration, are mixed and ground together, and before being placed are properly conditioned to reduce the danger of cracking through excessive expansion and contraction.

### *"Torcrete."*

The material so prepared is applied in even and uniform layers by means of a powerful stream of compressed air with a machine named the "Tector," specially designed by me for this purpose. For the material combination thus described the name "Torcrete" has been adopted. It is really a waterproof concrete of highest possible quality.

After the last coat of "Torcrete" has sufficiently hardened the outer surfaces are rubbed down to a smooth finish with rotary compressed-air-driven grinders, and the entire ship may be painted as usual.

It is quite likely that within the next few months several large "Torcrete" tank barges for Mexican oil trade will be built, these barges being of an all-over length of 310 ft., with a beam of 56 ft., and a 20 ft. draught when loaded. I am also negotiating for the construction of a large fleet of coal and ore barges.

### *Our Own Problem.*

For us in this country at the present time the problem resolves itself into the rapid construction of standardised ships of fairly large tonnage. The authorities concerned are, we understand, already devoting serious attention to the use of reinforced concrete for this purpose, and we shall follow with the keenest interest the development of an idea which appears to us to offer very great possibilities.

## REINFORCED CONCRETE IN THE GREAT EXPLOSION.

In a report, in the periodical called "Fire," upon the effects upon buildings of the explosion at a munitions factory, it is stated that the triumph of reinforced-concrete construction is the most striking feature of the catastrophe. Not only have such structures within the explosion area withstood the effect of the air wave, but they came through the ordeal of fire successfully.

The steel reinforcement within the concrete enabled the buildings to give slightly to the air wave when it struck the buildings; the windows caved in. The reverberating air entered, and, expanding, passed through the opposite windows, thereby helping to straighten up the main structure again, although fire was left behind. The fractures in the structures are only where the fires were fiercest, owing to the nature of the contents.

Brick structures collapsed ignominiously, being pulled inward by the floor and roof joists and girders. But brick chimney stacks, because they have no upper strain, without exception exist practically undamaged, having been able to give slightly to the force of the air wave and then spring back to perpendicularity.

The roofs of buildings, including dwell-



ing-houses, were lifted by the excess internal air pressure set up by the air blast passing in through windows and doorways. Not all the 100,000 windows broken were blown in; many were blown out by the advance wave entering open doors and creating a preliminary high internal pressure, sufficient to burst out some windows, before the main blast arrived and blew in the remaining windows.

Were it permissible, we would reproduce photographs of the area showing how wonderfully reinforced concrete withstood the shock of the huge explosion, but this is one of the things that must be deferred until after the War.

## THE FUTURE OF INDUSTRY.

In the report of their proceedings for the past year the Employers' Parliamentary Council (the executive committee of which includes Mr. William Shepherd and Mr. William F. Wallis, representing the National Federation of Building Trades Employers, and Mr. Benjamin Greenwood, representing the London Master Builders' Association), the subject of labour after the War is dealt with at length. The Council express the opinion that when the time comes for taking stock of the nation's industrial resources, in view of the universal competition which will rule the markets of the world, it will be found that any return, even on a small scale, to the conditions which governed national production in the period before the War would be disastrous and possibly fatal to British interests both at home and abroad.

The Council has watched the development of events in the industrial world since the outbreak of War with feelings of hope and confidence as to what the future has in store. "There has been considerable controversy in the pages of the magazines and in the columns of the leading newspapers, in which many well-known authorities in political and economic science have taken part, all pointing to the need for a better understanding, and more friendly relations, between capital and labour than have existed in the past; and all agreeing that the primary rule henceforward must be *work* and not *shirk* if the nation is to prosper and reap the fruits of its gigantic sacrifices. . . . If labour unions desire higher wages for their members, they should guarantee a high standard of production. If Canada annually produces 472 tons of coal per miner, Australia 542 tons, and the United States of North America 660 tons, while in Great Britain only 244 tons are produced, it is clear that something is wrong. . . . The same comparative figures apply to many other industries. The labour unions have set the slow and unwilling man's pace, and made it the standard. The quick and willing workman, who is worth twice or many times more than another, or others, has not been allowed to produce more than the indifferent workman. The general result of all this has been demoralisation among the workmen all round, and an increase in the cost of production, resulting in high prices for the commodities produced, of which the workmen themselves have to pay their share. What is even more important, it has placed a handicap on British industry, the weight of which can scarcely be estimated in the face of foreign competition of ever-increasing severity. . . . Great Britain cannot face the competition of the world unless labour is everywhere free to produce all it can. Let there be high

wages by all means, *but they must be earned*, and the standard of production must correspond with the standard of remuneration, otherwise it is obvious that in the great race for industrial supremacy we shall be beaten on every hand.

"The demand that after the War labour shall take a larger share of the profits of industry, a demand that has been endorsed by several members of the Government, and with which sympathy has been expressed in many influential quarters, is one to which no reasonable exception can be taken, provided that labour, earnestly and wholeheartedly, performs its part in the general scheme of production, and thus establishes a good title to the claim for greater remuneration. A high standard of production can be maintained only if the energies of capital and labour alike are exerted to their utmost capacity. Whatever the conditions under which various industries are conducted in the future, whether systems of co-partnership, or profit-sharing, or wages, the effort everywhere will have to be of a generally sympathetic and high-spirited character if all concerned are to benefit in the shape of increased gains. It has been frequently suggested of late that the War has broken down class barriers, and that the old element of suspicion, which it is alleged pervaded the relations between rich and poor, capital and labour, will have disappeared when the ordinary life of the nation is resumed. If this should prove to be so, and all classes unite in the common aim of ensuring the nation's prosperity and progress, there will be no room for strife and strikes, but each and all will be animated by mutual trust, and strive for the best results which friendly combination and co-operation can hope to achieve."

### *Housing and Municipal Works Departments.*

Referring to the subject of Government or municipal control of industries, the Council say: "There are indications that various bodies of social and other 'reformers' are persuading themselves that the first matters to engage the attention of Parliament and the country when peace has been declared, and the nation settles down to face the eventful future, will be their favourite schemes for curing the ills, real and imaginary, of the community. . . . As an example of what certain 'reformers' are now putting forward as part of the after-war policy of Parliament, attention may be called to some of the resolutions which a deputation of the National Housing and Town Planning Council submitted to the President of the Local Government Board on September 20, 1916. . . . One of these resolutions called for the provision of additional houses for the working classes, the setting aside of 'no less than £20,000,000 to make such advances to local authorities and other agencies as will enable them to provide houses at reasonable rentals.' Another resolution was to the effect that further provision of houses for the working classes 'can only be met by municipal enterprise, where other agencies fail,' and urged upon all local authorities throughout the country 'the supreme importance of preparing housing schemes at once.' It may here be noted that no consideration is given to the fact of the thousands of workmen's dwellings which have been provided by the Ministry of Munitions in all parts of the country. A further resolution urged the Government 'to set up machinery in all industries to require employers to pay wages sufficient to ensure decent housing accommodation for the

workers in these industries,' and 'to secure that, where such raising of wages can only be achieved by stages, the local authorities shall recognise and fulfil the duty of providing decent housing accommodation for those unable meantime to pay an economic rent, and that the whole country shall bear the difference in the cost between the rent of the decent dwelling and the rent which the tenants can afford to pay.'

"Here we have proposals involving a vast and universal scheme of municipal socialism, to say nothing of a Governmental regulation of wages and a systematic supervision of the domestic affairs of all the workpeople in the country. It is not suggested that private enterprise, which up to 1914 had adequately supplied all the housing wants of the community, is incapable of meeting whatever requirements may exist. The fact would appear to be that the promoters of these schemes do not want the 'other agencies' to which they refer to have anything to do with the matter, but that there shall be a huge system of municipal trading, with a countless army of officials, to give effect to their plans. Economic principles are to be set aside, and artificial conditions created for which the whole nation is to be taxed and employers generally super-taxed.

"Employers will closely watch this and kindred 'reforming' agitations with a view to preventing Parliament giving its sanction to any measures which aim at displacing private trade and enterprise and the establishment of Municipal Works Departments all over the country. The ill-starred experiments of the London County Council should be a sufficient warning against the general adoption of any such schemes; while the still more notorious example in Paris over fifty years ago, resulting in an insurrection which had to be suppressed by military force and bloodshed, should serve to deter Parliament from giving powers to 'elected persons' to embark upon schemes the ultimate aim of which, it is declared, is to 'find employment for everybody,' and thus, step by step, bring about the 'socialisation' of all trades and industries. This 'ultimate aim' is not disguised by those who have the courage to call for the logical application of the principle involved. The London Labour Federation has published a list of its 'demands,' which leaves no room for doubt in this respect. Government is invited to assume at once the ownership of all the means of communication and transport, and all the agencies for the supply of food and shelter in the metropolis; and generally to set up social and industrial conditions on the lines of the Paris Commune. Once the evil is started it will spread, and the result, as history shows, may be civil war and universal disorder."

## THE NISSEN HUT.

Referring to the article on the Nissen Hut on the Western Front, which appeared in our issue for last week, Messrs. D. G. Somerville and Co., Ltd., of London, S.W., write to say that they were one of the firms responsible for the supply of these most interesting new constructions for housing troops in the field.

"In France we have large joinery and machine works, where we have turned out more than 2,000 Nissen huts, and at our Edmonton and Wandsworth works we have turned out a further 600—this in addition to about 2,000 other huts of different types."



## ELECTRICAL NOTES.

*Shop Window Illumination.*

Among the various activities of the General Electric Company, Limited, illuminating engineering has an important place. The growing knowledge of the general public with regard to the need for carefully planned schemes of lighting, in order to avoid eye-strain and similar ills, is amply shown by an ever-increasing demand for installations. Among those which have recently been carried out is that for Messrs. Bourne and Hollingsworth, in Oxford Street, where the interior lighting is by G.E.C. "Verilux" glassware. This glass is composed of three layers, one being of a special blue colour, modifying certain rays from the electric lamp, thus enabling colours to be matched accurately by artificial light. The window illumination in this case is by a G.E.C. patent reflector of a special curve, which has the effect of flooding both window and goods with light. The light is so distributed as to illuminate, with a high degree of efficiency, the whole of the shop window and the goods displayed, no matter how closely together or in what position they may be placed. In fact, it is no longer necessary for the window-dresser to be restricted by limitations of lighting arrangements; he can dress his window as though it were permanently illuminated by daylight. Even goods placed close to the plate glass itself can be satisfactorily illuminated from the ceiling by this method.

The best effect is obtained by placing the reflectors in parallel rows in the window, the rows being approximately two feet apart, though this, of course, depends upon the depth of the window. The reflector, although designed primarily for shop-window lighting, is found to be perfect for stage lighting, and for the correct lighting of pictures, signs, posters, etc. The reflector IED 940 has been designed by the G.E.C. Illuminating Engineering Department, and is fully patented.

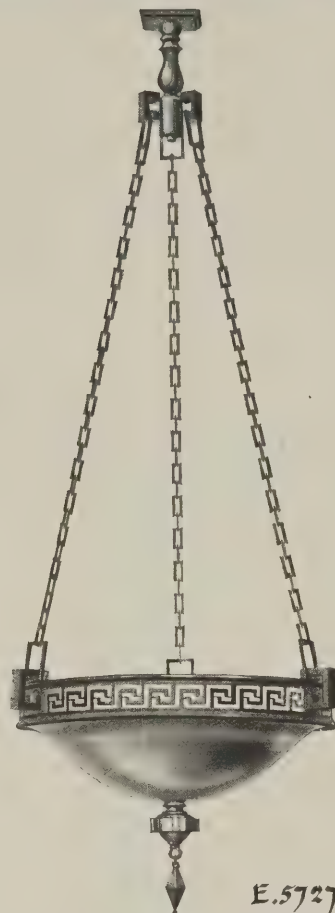
The problem of factory lighting has been successfully dealt with also by scientifically designed vitreous enamelled-steel reflectors, a branch of industry which, hitherto in enemy hands, is now engaging the attention of the English manufacturers. The high quality of finish obtained says much for the future of this industry. In this connection, the "Munitions" fitting is one of many types made by the G.E.C. It is used in conjunction with the Osram "Atmos" type lamp. Among other manufactures of this kind are porcelain reflectors, with scientifically designed contour and high quality of finish, giving the maximum result from specified lamps.

*Industrial Lighting Reflectors.*

Two new types of reflector—"extensive" and "intensive" respectively—have recently been introduced by Messrs. Simplex Conduits, Ltd. The first has been designed for workshop and general lighting. It is  $7\frac{1}{2}$  in. deep by  $6\frac{1}{2}$  in. wide, and is suitable for ordinary metal-filament lamps or for 60 watt half-watt lamps. The second is specially adapted to workshop and office lighting. It is  $10\frac{1}{2}$  in. wide by 6 in. deep, and is suitable for use with metal-filament lamps to 60 watts, and half-watt lamps to 100 watts. These reflectors have been designed on highly scientific lines, and they will no doubt be widely adopted for the lighting of industrial premises. Messrs. Simplex Conduits have just issued two postcards, on which illustrations and particulars of these reflectors are given, together with diagrams showing the representative illumination curve of each on the working plane.

*German Organisation of the Electrical Industry.*

Some astonishing facts and figures, revealing the remarkable ramifications of Germany's pre-War organisation of the electrical industry, have recently been given before the American Federal Commission. The report, of which an abstract has been published in the American Press, contains the following interesting statement with regard to the two principal German electrical concerns: "The A.E.G. and the Siemens-Schuckert have succeeded in concentrating about 80 per cent. of the entire electrical business of Germany into their own hands. Of this, about 45 per cent. is controlled by the A.E.G. and about 35 per cent. by Siemens. One of the distinctive features of the German electrical industry is the extent to which it is supported by banks. Through members of its boards and executives the A.S.G. is related to banks and banking groups representing 533,234,000 dollars. This close connection with great banking groups has assisted the A.E.G. in the promotion of foreign trade. These banks have aided in financing many foreign undertakings, in which electrical equipment was required. They have also assisted in the organisation of special banks and trust companies for electrical enterprises, preferably abroad. These banking connections also account for the credit extended in foreign trade by the A.E.G. and the Siemens-Schuckert concern. The A.E.G. has extensive connections with other important German business enterprises."



E.5727.

# INDIRECT LIGHT FITTINGS.

FOR

## HALF WATT LAMPS.

EVEN ILLUMINATION  
WITHOUT GLARE  
SPECIALLY DESIGNED  
FOR BANKS  
INSURANCE BUILDINGS  
AND THE LIKE.

**SIMPLEX CONDUITS LTD.**  
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## SHOWROOMS.

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MANCHESTER · GLASGOW · BRISTOL.  
NEWCASTLE · LIVERPOOL · LEEDS.  
SWANSEA · CARDIFF.



## LATE CONTRACTS.

## MISCELLANEOUS.

March 8.—**MATERIALS. London, E.C.**—Supply of the following for the Great Indian Peninsula Railway Company: Zinc sheets, etc.; paints, drysalteries, etc.; mantles for lamps. Particulars from R. H. Walpole, Secretary, Company's Offices, 48, Copthall Avenue, E.C.

March 19.—**MATERIALS. Coventry.**—Supply and delivery of the following materials during the year ending March 31, 1918, for the General Works Committee—viz.: broken road stone, broken slag, granite kerbs, granite setts, stonewar pipes, castings, workmen's tools. Particulars from J. E. Swindlehurst, City Engineer and Surveyor, Council House, Coventry.

Telegrams "Enriching" London Telephone N 18 26 Avenue

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**"MALTESE CROSS" BRAND.**  
highest quality, London

**PORTLAND CEMENT.**

LION WORKS, GRAYS, ESTABLISHED 1855.  
CAPACITY, 4,000 TONS WEEKLY

**35, GREAT ST. HELENS, E.C.**

## YORKSHIRE FEDERATION OF BUILDING TRADES EMPLOYERS.

The members of the Yorkshire Federation of Building Trades Employers held their annual conference at the Builders' Exchange, Sheffield, on February 22. Subsequently the members, in conjunction with the Sheffield Master Builders' Association, held their annual dinner at the Grand Hotel. Replying to the toast of "The Imperial Forces," proposed by Councillor Arthur Neal, Captain Barnsley, Chief Recruiting Officer at Sheffield, said he knew from the way the building trades had met the national calls upon them in the past that they would not hesitate to go through any ordeal in the interests of the nation. Alderman Fenton, F.R.I.B.A., in proposing the toast of "The Federation of the Building Trades Employers," said he believed he was not asserting too much when he said that the building trades had done their share in the defence of the country and the successful prosecution of the war. The building trade was the one trade, he might say, which could be carried on even in spite of the blockade, for, with the exception of timber, they could get all their materials from within. Mr. Charles Boot, president of the Association, responding, said that the reason for their conference that day was to prepare for peace. The primary and greatest problem was the relation of employer and workmen. They must not again return to the days of strife and strikes. Having paid a warm tribute to the part trade unions had played in the War, he said they wanted the trade unions to agree that the primary rule henceforward must be work and not shirk. They must guarantee a higher standard of production. A further problem which the builders would solve, if they were helped

by their workmen and not hindered by the Government, was the provision of housing accommodation. It was necessary to induce the Government to repeal the clauses of Part 1 of the Finance Act.

## TRADE AND CRAFT.

## "Peterlineum" Wood-Preservative.

Messrs. C. A. Peters, Ltd., Derby (London offices and stores, 116, Newgate Street, E.C.; Liverpool office and stores, 4, Castle Street Arcade), draw attention to the fact that they have altered the name of their Carbolineum to Peterlineum. Having improved the material they have given it another name. A pamphlet issued by the firm states that Carbolineum Avenarius, or, as we must now call it, Peterlineum, penetrates into wood, and driving out the moisture, makes it impervious to damp, thus protecting it from rotting and from the action of noxious gases and acids. It is easily applied, by either painting or immersion, and requires no skill in handling. One gallon of it, the pamphlet states, will cover from 30 to 50 square yards, according to the nature and surface of the wood. Not only does it arrest or prevent decay, but it is also an antidote against dampness, and is therefore specially recommended for woodwork in damp situations and humid climates. It is inimical to parasites—whether to the dreaded white ant of tropical countries, or to the many insect pests which infest farm buildings, stables, hop-gardens, nurseries, etc., in our own country, and it is applicable to building-stone, stucco, and plaster, as well as to timber, to render them waterproof. It is extensively used in the treatment of wood-paving blocks for street carriageways. No costly plant is required, a few minutes' immersion of the blocks in Peterlineum being all that is necessary to secure thorough impregnation. The material is not inflammable, and is of an agreeable colour, both which qualities make it specially suitable for half-timber work, estate work, park fencing, and the like.

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Improved Process. No Injury to the Fabric.

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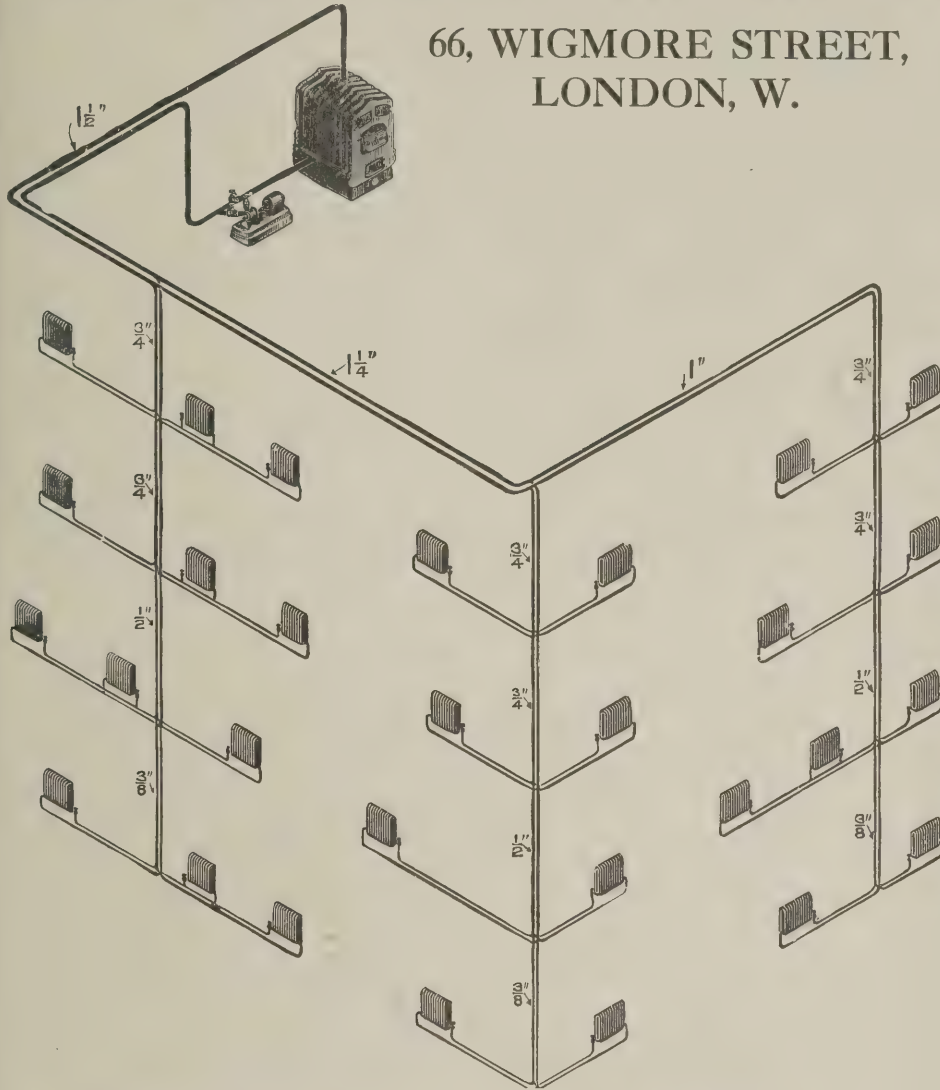
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Cabinet Hot Closet or Cupboard—either steam or gas-heated—for warming up dinners for  
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suit the number required. As supplied to the Admiralty for H.M. Dockyards, and to a large  
number of Factories.

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## BOOK NOTICES.

*Lockwood's Price Book, 1917.*

Although, at the present time, prices cannot be definitely stated with anything like certainty that they will hold good for more than a few days, it is nevertheless possible to draw up lists that will afford valuable guidance in estimating—verification or correction (necessary even in normal times) being left for direct inquiry at the moment of purchase. It follows that the utility of "Lockwood" is not appreciably diminished—more especially since prices form but one item of the mass of information that the volume embodies—the notes and memoranda on the various trades, the legal notes (always a valuable feature of this annual), the

text of the Building Acts, the bye-laws of the London County Council and the City of London, and many other matters of substantial use and interest.

"Lockwood's Builder's, Architect's, Contractor's and Engineer's Price Book for 1917." Edited by R. Stephen Ayring, F.R.I.B.A., M.R.S.I., etc. Pages civil + 284. London: Crosby Lockwood & Son, 7, Stationers' Hall Court, Ludgate Hill, and 5, Broadway, Westminster.

*The Principles of Plain Painting.*

In publishing, at the modest price of fourpence, a pamphlet on "The Fundamental Principles of Plain Painting" (The Trade Papers Publishing Co., Ltd., 365, Birkbeck Bank Chambers, High Holborn, W.C.), a movement is initiated which we hope to see vastly extended. An essential need in the industrial reorganisation of this country is the dissemination of the means of improving craftsmanship of every kind, by stimulating intelligent interest in it, and

by providing material for a more scientific grasp of the principles underlying even the simplest operations. In the pamphlet under notice, which comprises notes from lectures delivered by Mr. James Lawrence to students of Painters' and Decorators' Work at the London County Council School of Building, no words are wasted, and the mass of valuable practical information thus tersely conveyed—on pigment, binder, thinner, drier, priming for various surfaces, sequences of coats, finishes—could easily have been expanded into a large and correspondingly expensive volume; but Mr. Lawrence has chosen the more excellent way, and we trust that, for the advancement of technical knowledge, he may find many imitators in all departments of industry.

*"Registration of Business Names."*

This is a handy booklet for business men (Jordan and Sons, Ltd., 116 and 117, Chancery Lane, W.C., and 13, Broad Street Place, E.C.; 6d. net). It sets out very clearly the requirements of the Act of 1916, with examples, and shows who must register and how to set about it. No detail seems to have been overlooked.

## THATCHING & REED LAYING

J. G. COWELL, SOHAM.

## Publisher's Notices.

Offices: ADVERTISEMENT, EDITORIAL, COUNTING HOUSE, AND PUBLISHING—27-29, Tothill St., Westminster.  
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Telephone: ADVERTISEMENT, EDITORIAL, COUNTING HOUSE, AND PUBLISHING—6936 Victoria (2 lines).  
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Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.

Rates for serial Advertisements, Special position, etc., sent upon application.

27-29, TOTHILL STREET, WESTMINSTER, LONDON, S.W.

*Waterproofing Walls.*

There are two methods of constructing dry external walls. One is to form a cavity in the wall, and the other system is to build a solid wall and then render it with waterproofed cement. It has been proved in practice that the latter, in addition to being the surer way, is also the more economical. In a recent town planning scheme at Bradford, Yorks, the houses were built with solid walls and rough-casted with Pudloed cement, and the result has proved satisfactory.

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Restorers and Preservers of  
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## TESTS OF SLAG AS AGGREGATE FOR CONCRETE.

The relatively high strength of slag concrete is well known, but few tests have been made to compare the relative value of different slags and to study comprehensively the various qualities. Such an investigation and tests, described in a paper presented before the annual meeting of the American Concrete Institute by Sanford E. Thompson, consulting engineer, of Boston, are taken by permission from a report made by the author to the Stone and Webster Engineering Corporation for the purpose of determining the availability of slag as an aggregate for plain and reinforced concrete. Several series of tests were undertaken, and conclusions are drawn from these tests and from a study of previous investigations.

### *Results from Tests.*

As a result of the tests the following conclusions have been reached:

1. The strength of concrete made with slag, such as is obtainable commercially in eastern and northern Ohio, was on the average about 50 per cent. higher at the age of twenty-eight days than gravel concrete made with first-class materials.
2. Using the same proportions by volume as for gravel concrete, about 15 per cent. more cement on the average was required per cubic yard for slag concrete than for gravel concrete of the same proportions.
3. No authentic cases of deterioration of slag concrete made with Portland cement or of rusting of steel embedded in such concrete have been discovered.
4. Porous slag produced a concrete sub-

stantially the same strength at twenty-eight days as dense slag. At later ages the dense slag is probably stronger.

5. Slag made by different processes and under different conditions showed no marked difference in strength and other characteristics.

6. An extremely hard, dense, acid slag did not produce a concrete of greater strength than porous, basic slag on a twenty-eight-day test.

7. The weight of the slag concrete tested averaged about 6 per cent. lighter than an average gravel concrete. On the other hand, very dense acid slag concrete was heavier than gravel concrete.

8. Granulated slag sand produced a mortar of inferior tensile strength on short-time tests.

9. Crushed-slag screenings produced a mortar appreciably higher in strength than standard-sand mortar.

Tests thus far made for permeability of slag concrete are insufficient to determine its availability for thin watertight work such as tanks. The weathering qualities of slag concrete are indicated as satisfactory by examination of structures which have been built for a number of years.

### *Specifications for Use of Slag for Concrete.*

The tests have not been extended over a long enough period to warrant final recommendation for specifications. It appears from the results thus far obtained that for practical construction:

Slag must be air-cooled, crushed, screened from dust, and free from foreign material. The weight of screened slag when shaken to refusal should not be less than 65 lb. per cubic foot.

On account of the nature of the slag, exceptional care must be used in proportioning, mixing, and placing, especially where concrete is chuted, to insure a uniform dense mix.

Commercial practice requires the banking of slags which are low in magnesia (say 1 to 2 per cent.) for at least six months. Slags of higher magnesia content (say 5 to 6 per cent.) appear to require a much shorter period of seasoning.

If the joint committee's method of basing allowable stress on strength of cylinders at twenty-eight days is followed, it would be permissible to use with the slag concrete 50 per cent. higher stresses than with gravel concrete, or, conversely, to use lean enough proportions in similar ratio. While so large a stress is not yet warranted without still more extended tests, the results indicate that where slag is accepted for use it is permissible to use at least 15 per cent. less cement with the same stresses, so as to put the slag concrete on the same basis, commercially, as gravel concrete. This would permit proportion  $1:2\frac{1}{2}:4\frac{1}{4}$  in place of  $1:2:4$  commonly used in reinforced concrete. The slightly larger ratio of sand to coarse aggregate suggested is advantageous in filling the voids.

### *Further Tests Needed.*

Further information is desirable on long-time tests of slag concrete exposed to air and to moisture to compare the relative value of porous and dense slag as aggregates. Certain of these specimens should be ground so as to expose the aggregate to the weather. Permeability tests, tests of modulus of elasticity, and tests of expansion from changes in temperature and moisture also should be made.

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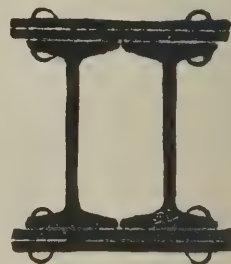
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## SOCIETIES AND INSTITUTIONS.

*Architectural Association of Ireland.*

At a meeting of the members of the Architectural Association of Ireland, held in their rooms in South Frederick Lane, Mr. H. G. Leask (President) in the chair, Mr. M. J. Burke, F.S.I., read a paper on "Modern Heating Methods," in which he explained the principles and considerations governing present-day methods of heating large buildings by means of hot water, and also the various systems of steam heating. The lecturer dealt with some of the more generally accepted theories on the subject, illustrating his observations by diagrams and views of portions of heating plant in actual use. Mr. B. Howard Pentland, F.R.I.B.A., moved the vote of thanks for Mr. Burke's exceedingly practical and opportune lecture on a subject that deserves close attention from architects.

The Rev. C. Lawless, C.C., was the lecturer at a meeting of the Architectural Association of Ireland, held in the rooms, South Frederick Lane. His subject was: "Architectural Snapshots in Many Lands." In the course of his travels round the world, Father Lawless has obtained a unique collection of views, and the exhibition which he gave showed that he has a keen appreciation of the beautiful in art and in nature. The better known architectural features of the various countries were not shown, the lecturer devoting his address and exhibition to less familiar, but equally interesting, "snaps." Denmark, Norway, Russia, Austria-Hungary, Turkey, the Holy Land, Egypt, Tunisia, Italy, France, Spain, Portugal, and other countries contributed numerous specimens of beautiful architecture. At the close of the

exhibition Mr. H. G. Leask, President of the Association, conveyed the thanks of the members to the lecturer.

*Glasgow Architects' Institute.*

The annual report of the Council of the Glasgow Institute of Architects, submitted at the annual meeting, at which Mr. John Watson, F.R.I.B.A., presided, shows that the membership stands as follows: 107 Fellows, 67 Associate members, 37 Lay and Student members. The roll of honour contains fifty-five names, and many other members are doing work of national importance. The chairman stated that a deputation from the various architectural societies had been received by Mr. Neville Chamberlain, who asked that an advisory committee might be set up, which could keep in touch with him, and suggest from time to time ways in which the services of architects might be best utilised.

## A NATIONAL WAR MUSEUM.

Sanction has been given by the War Cabinet to the scheme put forward by Sir A. Mond, M.P., the First Commissioner of Works, of establishing a National War Museum, and a committee has been appointed to carry out the project.

The First Commissioner of Works will act as the chairman of this body.

The object is to collect and preserve for public inspection objects illustrating the British share in the war. The exhibits will comprise examples of the arms and other war materials used by the British naval and military forces, trophies captured from the enemy, souvenirs found on battlefields, inventions connected with

muniton making at home, the literature and art of the War (including regimental magazines and trench drawings), maps, the music of the War, placards issued by the Government in connection with the recruiting, economy, and loan campaigns, medals and decorations, flag-day souvenirs, and autograph letters of some of those who have taken distinguished parts in the War.

It is hoped that all persons and public bodies who have objects of national interest connected with the War will communicate with the Secretary, National War Museum, H.M. Office of Works, Storey's Gate, London, S.W., but no article intended for exhibition should be forwarded before the secretary has been communicated with.

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## ELECTRICAL NOTES.

*Tungsten and Its Uses.*

Considerable interest has been aroused by the production of tungsten in this country from ores mined in our overseas dominions. Tungsten is an essential ingredient of high-speed steel, and previous to the war Germany had practically a monopoly of the supply. This is no longer the case, a powerful British company having been formed to develop the industry for Imperial use exclusively. Tungsten is an exceedingly refractory substance with a melting point higher than that of any other metal, its fusing temperature being about 3,050 deg. centigrade. It is that characteristic that makes it suitable for electric lamp filaments. It is so hard that it will scratch glass, and it is unaffected by most acids, while it does not rust; tungsten drawn wire is stronger than the strongest steel piano wire. Until the electric furnace made possible the production of pure tungsten from the ore, it was not available for commercial purposes, and it is only within recent years that methods have been evolved for producing pure metallic tungsten, and more recently for drawing it into wire. Tungsten as ordinarily supplied is exceedingly brittle, and it was long considered impossible to make it ductile so that it might be drawn into a wire. Untiring research in the Mazda lamp laboratories, however, was eventually crowned with success. In the early stages of the development of drawn tungsten wire, its production was attended with the greatest difficulty. At first a piece of a few feet long was a wonder, but now a piece a mile long, and of absolute uniform diameter, is commonplace. A filament of drawn tungsten wire can now be made far more accurately and of more uniform quality than the old carbon filament. Since tungsten has been available in ductile form its uses have greatly multiplied. It is coming into general use as a contact material for electrical apparatus, for special electrical furnaces, and for other purposes where a high melting point is essential. Another interesting use for tungsten is for targets in X-ray tubes. The tungsten used for the light-giving filaments of Mazda wire lamps is mined in Cornwall, and the whole of the processes necessary, from extracting the metal from the ore to rendering it ductile and making it into continuous filaments for electric lamps, are carried out in the Mazda lamp factory in Rugby.

*The Illumination of Kinema Theatres.*

In the course of a recent lecture before the Illuminating Engineering Society, Dr. James Kerr (Public Health Department, L.C.C.) made some remarks which should be very interesting to architects and others concerned with the illumination of kinema theatres. Extreme contrast between the brightness of the screen and of the general surroundings, he said, is objectionable. The ratio of 1 : 100 would imply brightness of surroundings of, say, not less than 0.01—0.02 ft. candles. In practice this value can easily be attained. A certain amount of illumination on the seats has also been considered desirable to enable people to find their places. A value of 0.2 to 0.5 ft. candles has been suggested for this purpose. By careful design it could probably be arranged that the provision of this extra illumination would not materially affect the brightness of the screen and would therefore not impair the image. Any lights or illuminated notices indicating exits, etc., should be carefully screened so that their brightness does not exceed 3 c.p. per square inch. This is ample for the purpose in view but not high enough to cause glare. The illumination in the theatre should be controlled by dimmers so that it can be gradually diminished before films are shown, thus avoiding the painful effect on the eyes of suddenly switching on and off the full illumination. The illumination in corridors should have a value intermediate between that outside and in the theatre. An illumination on the floor of 0.5 ft. candles would be sufficient. Here again all lights should be shaded. The convention employed in the early Tube days, namely, that going towards green lights leads to safety or exits, and that departing from red lights indicates the same procedure, might be adopted.

*Electric Lamp Glass Regulations.*

Electric lamp manufacturers are vitally affected by the new regulations; just issued by the Ministry of Munitions, with regard to the use of glass for electric lamps. These regulations (which are printed in full on page 171 of this issue) prohibit the manufacture of electric lamp glass without Government sanction. In addition, it is laid down that no person shall buy, sell, or deal in any electric lamp glass situated, or to be manufactured outside the United Kingdom unless a certificate of authorisation has been issued by the Minister of Munitions. It is to be noted that "electric lamp glass" does not refer to glass used in lamp caps for insulating purposes nor to glass shades and similar accessories.

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## HOUSE FAMINE IN MANCHESTER.

At a meeting of Manchester City Council, Councillor Day moved the appointment of a special committee to inquire into housing conditions in Manchester; to ascertain the causes of the present shortage of houses, past methods of providing houses, and the accommodation necessary adequately to ensure the comfort, health, and moral well-being of the community; and to make definite recommendations whereby a sufficient provision of suitable houses might be secured. The resolution provided that the committee should consist of three members each nominated by the Improvement and Buildings, the Paving, Sewerage, and Highways, and the

Sanitary Committees. This proposal, he explained, was simply a response to a request made by the Local Government Board that all municipalities should prepare schemes of national benefit which might be put into operation when demobilisation came. The position of the housing problem was serious in Manchester before the war, it had become intensified since, and it would be greatly aggravated when demobilisation came. In the six years ended in 1903 there were 20,157 houses erected in the city as at present constituted, in the next six years 18,570, and in the six years ended in 1916 only 7,061. Each year after 1909 there had been a gradual diminution, until last year, instead of an average of 3,616, such as was experienced in the first six years referred to, only 119 new houses were erected. In the whole of those eighteen years—excepting 1915, which was phenomenal—there was little variation in the number of marriages, which equalled two to every house erected. From that it might be assumed that if one new house were erected for every two marriages the supply would be equal to the demand. In the first six of the years taken the proportion of new houses to marriages was 55.5 per cent., in the next six years 50.07 per cent., and in the last six years only 14.8 per cent. The average number of marriages in Manchester was approximately 6,000 per annum. In 1915 it rose to 15,996, indicating that when hostilities ceased thousands of young men who had gone to the front would have to find homes. Unless it were coped with, this house famine would inevitably tend to perpetuate the evils of overcrowding.

Alderman Turnbull, in seconding the resolution, said there never was a greater shortage of houses at any period of the

city's history. At present there was hardly a single weekly house to be had.

Councillor T. R. Marr suggested that the Special Committee should have power to take evidence from property owners, builders, architects, and various organisations.

Alderman James Johnston approved of the resolution, but moved as an amendment that there should be four members from each of the committees named, and also from the Finance and Town-planning Committees. Such an important subject should be dealt with on the broadest possible basis, for there was a terrible amount of overcrowding in the city, and he believed it was the root cause of the increase of crime among children.

The amendment was seconded by Alderman Wilson, but rejected, and the resolution was adopted.

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## REINFORCED CONCRETE WHARVES AND JETTIES.

Mr. William Cleaver, M.Inst.C.E., who, as engineer of the Port Talbot Railway and Docks, has had great experience in dock construction and maintenance, read before the Concrete Institute a paper in which he enumerated the combination of circumstances which affect the design and which should be taken into account before finally deciding upon it. He made it a great point that the dredging should be effected end-on to the face, and illustrated the evils of working dredgers alongside of it. Piles having an area of 196 sq. in. were the best, whether square or round—square ones about 30 ft. long are used at Port Talbot. The face piles are encased in a reinforced cylinder filled with concrete—protected by timber fenders attached to the superstructure and capped by a timber balk connecting them. The whole structure is so heavy and massive as to form a monolith capable of resisting very heavy shocks with very little damage to the structure—but with disastrous effects on colliding vessels. The piles are reinforced with four heavy mild steel bars, and the shoes have an even taper and a cast-iron base with a blunt point. The bars rest on the casting and the pile is capped by a helmet. The drivers have monkeys of equal weight to that of the piles, and the drop is small and as frequent as the endless chains used in lifting the weight will allow.

Mr. Cleaver insists on all junctions or crossing of bars being carefully tied together by wire, and he drew attention to the fact that the sagging of the bars during construction on the flat altered the

direction of the tensile stresses and should be taken into consideration. He recommended that the bars should not vary in thickness less than  $\frac{1}{8}$  in., to avoid misplacement. Keen competition, however, led contractors to work as near as possible to the calculated dimensions. All bars should be covered by a thickness of concrete at least  $1\frac{1}{2}$  times their diameter. The outer shape of the different parts should be standardised as much as possible, the difference in their loads being allowed for in the reinforcement. The parts should be separate as much as possible; by these means they could all be prepared in a yard under close supervision and be joined together on this work.

The lecturer considered that the engineer responsible for the work should be capable of designing the necessary reinforcements and thereby be in a position to judge of the merits of those submitted by specialist contractors, who, as a rule, should be entrusted with such designs if not with the execution thereof in all large undertakings. As a backing to a wharf where there was solid ground, an abutment wall should be provided which would take and distribute any abnormal thrust on the wharf-face. One of the great advantages of a wharf or pier made of reinforced concrete is its own immunity from fire, which would extend to any structures or goods on it. In the case of oil cargoes these are liable to drippings which would spread a fire all over the wharf and even on the surface of the water. A timber wharf is often burnt down by such causes with everything on it—a reinforced wharf would escape unscathed and would not spread the conflagration. "Although it is admitted that the bulk of the work can be carried out by

unskilled labour, the necessary small amount of skilled labour and supervision is absolutely vital and must be efficient if the ultimate result is to be satisfactory to all concerned."

## SOCIETY OF ARCHITECTS.

### *The Society's Staff and War Service.*

At the outbreak of war, the male members of the Society's clerical staff offered themselves for military service. The junior, J. Jones, was accepted, joined the Royal West Kent Regiment, and was wounded in the head at Hooge. He has been since promoted to corporal, and has returned to duty. The assistant secretary, Mr. W. E. Wanmer, was rejected as unfit, and joined the V.T.C. He was subsequently re-examined and passed for general service, and has joined the 28th County of London Regiment (Artists' Rifles). The secretary being over the age limit, and therefore ineligible for the Army, took up Red Cross work, qualifying in three subjects. He joined the A.A., V.A.D., London 43, and worked also with the London Ambulance Column, both as stretcher-bearer and ambulance and hospital orderly. He resigned to take a commission in the Volunteer Force (County of London).

### *Vacancy on the Council.*

To fill the vacancy on the Council caused by the death of the late Mr. Edward Cratney, of Newcastle-on-Tyne, the Council have co-opted Mr. A. G. Ware, of Bournemouth, for the unexpired period of the late member's term of office.

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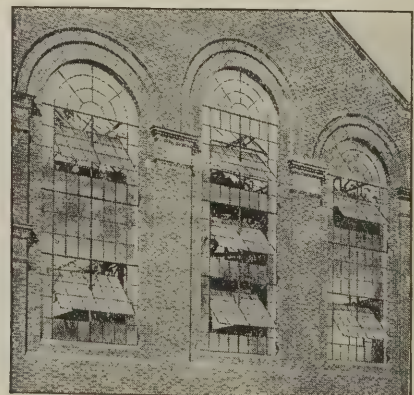


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## ELECTRICAL NOTES.

*Some New Electrical Specialities.*

The General Electric Co., Ltd., is prolific in the production of specialities. Hardly a month goes by but some new and attractive electrical accessory is brought out by the G.E.C. Concerning three new specialities illustrated pamphlets have just been issued. They are entitled (1) "Moulded Insulation Terminal Blocks," (2) "Haulage Road Signalling in Collieries," and (3) "The 'Kingsway' Miners' Lamp." With regard to (1) it may be stated that small motors are greatly improved in their reliability and appearance by employing a small moulded terminal block to take the connections which otherwise might hang loosely, or might be taken to brass thumb-screw terminals. For this purpose the G.E.C. manufacture in their insulation department, Witton, a large variety of terminal blocks to meet the requirements of different kinds of motors. Continuous current motors which are so small that they do not need a starter will probably be fitted with a two-way block, while when a starter is used a three-way block will be necessary unless the motor should be intended for reversing, in which case a four-way block will have to be provided. For three-phase motors the three-way block can be used, but for special purposes a different form may become desirable. The insulating properties of the blocks are extremely high. Between terminals the block will stand many thousands of volts, and will give an infinity reading on the ohmer or megger.

With regard to (2) the apparatus consists of specially designed mining type bells combined with relay and interrupter push (the latter for use at the bell or indicator stations); patent interrupters fixed at intervals in the line; and cable (pull wire), cells and insulators. The system employed is entirely operated by one line wire, which serves the purpose of a pull wire and at the same time carries the current of the line circuit. This has a maximum of .02 amperes at 6 volts, the former varying in accordance with the number of relays in circuit. Where an efficient "earth" can be obtained, it is only necessary to use a single line wire, either of the special insulated type which is supplied for this system, or bare galvanised iron; the former is specially recommended for making a thoroughly efficient system. Where it is difficult to obtain an efficient "earth," it is advisable to use a bare wire run anywhere along the road for the return circuit. The main feature is the closed circuit principle adopted, commencing from "earth" to a battery of four Carsak Leclanché or ordinary type (wet) Leclanché cells, and continuing through the patent interrupters inserted at various points in the line, and in series with all the relays in the system, finishing with an efficient "earth" point or returning through the return wire if such be found necessary (the latter very rarely occurs except in very dry pits).

With regard to (3), the governing considerations in the development of this lamp were efficiency of illumination over the full run of nine or ten hours, together with strong construction, durability of parts, and freedom from corrosion. The accumulator is of the non-spillable type. The accumulator terminals and switch arrangements have been specially designed to minimise corrosion, and particularly to stop corrosion during charging, at which time there is more liability of acid getting on to the terminals. The spring-controlled switch contacts are of robust construction, consisting of strong flat springs with the upper ends screwed to the lampholder, and the lower ends having the switch knobs riveted into them. The lampholder is provided with an adjustable conical reflector to come below the lamp, and another conical reflector is supported on top of the lamp bulb. These reflectors are of polished nickel, and are so shaped that they considerably increase the illumination in the horizontal direction. The leaded steel case is fitted with a strong threaded sleeve which screws into the head of the lamp. The head is built on a strong brass casting and is provided with a magnetic lock of simplest construction. No parts of this lock are accessible when the head of the lamp is screwed on, but when it is off, the taking out of one screw allows the bolt and controlling spring to be removed and examined.

*A Pamphlet on Industrial Fittings.*

The British Thomson-Houston Co., Ltd., have issued an attractive reprint of an article by Mr. H. C. Wheat on "Industrial Fittings for Half-Watt Type Lamps." It describes the desirable engineering features embodied in the most up-to-date equipment of industrial fittings, covering the mechanical details as well as the electrical and illuminating engineering design required to produce the most effective lighting results, and it is obviously an opportune contribution to the stock of practical knowledge which, in view of industrial developments, should be augmented by all possible means. A copy of this pamphlet may be obtained on application to the company.

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## NEWS ITEMS.

*Requisitioned Buildings.*

A return of temporary buildings erected and premises hired for the war in the London district states that the buildings acquired include eight hotels, four clubs, nine public buildings—museums, galleries, municipal buildings, etc.—twelve private houses, ninety-six commercial offices (either whole premises or portions of premises), and fourteen warehouses. No hotels have been bought; all have been either hired or requisitioned.

*Newcastle Infirmary Extension.*

At a meeting of the Stewards' committee of the Freeman of Newcastle, a deputation, headed by Sir George Hare Philipson, waited upon the committee, and explained the necessity for an extension of

the Royal Victoria Infirmary, which would involve the enclosing of an additional 15 acres of land upon the Leazes, adjoining the present buildings. The committee unanimously agreed to give up the Freeman's interest in the 15 acres as a free gift.

*Hospital Architecture, New Style.*

An interesting discussion took place at the last meeting of the Bradford Board of Guardians on the changes that have come about in relation to the type of building most suitable for hospital purposes. Medical authorities, it was remarked, have now completely revised their opinion as to the style of building required. The time for erecting barrack buildings has gone by, and it was agreed on all hands that for hospital purposes single-decker or two-decker buildings are much better. The opinion was expressed that in premises constructed on these new lines better lighting and better ventilation can be provided. But the prohibitive cost of urban land seems to have been overlooked.

*Faculty for Memorial Chapel Refused.*

The adjourned application of the Rector (the Rev. E. J. Nurse) and churchwardens of Windermere to erect a war memorial chapel at the north-east end of Windermere Parish Church was dealt with by Chancellor Prescott at a meeting of Carlisle Consistory Court. The chapel was to be the gift of Sir Wm. Forwood, and was to cost £2,500. At the last Court the Chancellor emphasised that the proposal would make a very serious alteration in an ancient parish church, and he adjourned the case in order to obtain expert opinion on the matter. That opinion had, he said, unmistakably confirmed his own. He had come to the conclusion that the Court would not be justified in granting the faculty asked for.

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May 3.—**WATERWORKS, Ballinamore (Ireland).**—Completion of waterworks in Ballinamore, for R.D.C., according to plan and specification prepared by O'N. Clarke, B.E., Carrick-on-Shannon. Works include erection of fountains at Market House and Chapel Lane, laying of water pipes and manholes, and enclosing existing well, etc. Forms of tender and plan and specification of J. A. Kiernan, Solicitor, Ballinamore. £5 deposit required. Tenders to M. Bannon, Clerk, Bawnboy.

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## OBITUARY.

*Mr. John Mackenzie, C.E., J.P.*

Mr. John Mackenzie, C.E., J.P., who has died at a private nursing home, was a member of the firm of Young and Mackenzie, architects, Belfast. Mr. Mackenzie was a Belfastman, and spent all his life in his native city. A son of the late Rev. Joseph Mackenzie, minister of Malone Presbyterian Church, he was born in September, 1844. After receiving his education at the Royal Academical Institution, he served his indentures as architect and civil engineer with the late Right Hon. Robert Young, C.E. Subsequently he became a partner of that gentleman, whose son, Mr. R. M. Young, J.P., also joined the firm, which, under the title of Young and Mackenzie, has been responsible for the design and erection of some of the most important buildings in Belfast and other Ulster centres, among them being the Assembly Buildings, the Scottish Provident Buildings, the Ocean Buildings, Purdysburn Fever Hospital, the Royal Academy, the King Edward Memorial Buildings of the Royal Victoria Hospital, the Slieve Donard Hotel, Newcastle; Messrs. Robinson and Cleaver's premises, Messrs. Anderson and M'Auley's buildings, Whiteabbey Sanatorium, and Fitzroy Avenue Church. His recreations consisted chiefly of music and yachting. For many years he was a prominent member of the Philharmonic Society, and he belonged to both the Royal Ulster and the Royal North of Ireland Yacht Clubs, while he was a very old member of the Ulster Reform Club. He was a magistrate for the city. He took a strong and patriotic interest in the war, and was proud of the fact that

besides four nephews of his own no fewer than eight apprentices of the firm of Young and Mackenzie have joined the forces since the war began.

*Mr. A. S. Biggart, M.I.C.E.*

In the death, on April 26, of Mr. Andrew S. Biggart, chairman of Sir William Arrol and Co., Ltd., Glasgow, there has passed away one who took a leading part under the late Sir William Arrol in the work of building the Forth Bridge. Mr. Biggart had been laid aside for about two months, and his death took place at his residence, Inchgarvie, Sherbrooke Avenue, Pollokshields. Born in the Ayrshire parish of Beith fifty-nine years ago, Mr. Biggart was trained as a mechanical engineer, and entered the service of Mr. (afterwards Sir William) Arrol. When the firm obtained the contract for the construction of the Forth Bridge thirty-five years ago, Mr. Biggart (then but twenty-four years old), as resident engineer and general manager, was intimately associated with the execution of the contract from its inception to the finish. In 1890, on the successful completion of the great undertaking, which involved many new problems, and the design of many new types of machine tools and appliances, Mr. Biggart was assumed a partner of the firm, and he has taken a prominent part in carrying out many important bridge-building and kindred contracts throughout the country—for example, the steelwork of the Tower Bridge, London; the rebuilding of the Redheugh Bridge, Newcastle-on-Tyne; new bridges across the Clyde for the Caledonian Railway and Glasgow and South-Western Railway Companies; and bridges across the River Barrow and River Suir, Ireland;

the widening of the Blackfriars Bridge across the Thames, and the large bridge over the River Wear at Sunderland (where the main span, weighing approximately 3,000 tons, was erected by overhang), and many other large structures of a similar character. The firm have had as many as half a dozen large bridges on hand at one time, as well as a great variety of structures of diverse kinds in steel and its combinations. During all this period the mechanical engineering department was rapidly developed, hydraulic and mechanical work of various kinds was carried out, including the design and manufacture of stoking and coal-handling plant for gasworks, and the department has designed and fitted up large installations in most of the principal gasworks at home, as well as a large number abroad. In the course of this work Mr. Biggart was the inventor of many novel mechanical engineering appliances. When the firm was converted into a limited liability concern in 1893, Mr. Biggart became a director, and on the death of Sir William Arrol a few years ago he succeeded to the chairmanship of the board. He was a member of the Institute of Civil Engineers and of other institutions connected with his profession, and convener of the Committee on Engineering of the Royal Glasgow Technical College. He also associated himself with many philanthropic movements and was widely esteemed for his good deeds and his amiable temperament.

Mr. Archibald Mathias Dunn, of Branksome Park, Dorset, formerly of Castle Hill, Wylam-on-Tyne, architect, a partner in Dunn and Hanson, who died on January 17, left £36,820.



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## ELECTRICAL NOTES.

*A New Electric Power Station.*

At a recent meeting of the Institution of Civil Engineers, an interesting paper was read by Mr. Ernest Matthew Lacey, M.Inst.C.E., on the subject of "The New Electric Power-Station at Birchills, Walsall." Reference was made to the controversies regarding the economy which arises in the production and distribution of electricity by the concentration of plant in power-stations of large capacity, and the author expressed his views as to the ultimate limit beyond which no appreciable advantages would accrue by reason of such concentration.

It is claimed that the Walsall power-station is by far the lowest in cost per kilowatt of any yet erected in this country; this is due to special features in the design and type of plant installed, these special features consisting more particularly in the excellent arrangement of the coal-handling and boiler-house plant.

The main object in the design of the coal-handling plant was to obtain adequate coal-storage and at the same time to save the heavy expenditure that would be involved on constructional work necessary to provide for overhead coal-storage bunkers of large capacity.

The boiler-house is designed for six self-contained units, each unit consisting of a water-tube boiler with integral super-heater, a super-imposed economiser, ejector induced draught plant, a steel "Venturi" type chimney, and a mechanical chain-grate stoker. Each unit is designed for a high duty evaporation of 30,000 lb. of steam per hour from water entering the economiser at a temperature of 100 deg. Fahr. The results of the normal and high duty tests of a boiler unit of the type adopted show an overall efficiency of over 88 per cent. based on the net calorific value of the coal. Incidentally it is claimed that the Walsall power-station is one of the first examples erected in this country for the accommodation of the special type of boiler unit described. Mr. Lacey advocated a high concentration of steam-raising plant in modern power-houses.

The engine-house is designed to accommodate three 4,000-kilowatt turbine-driven alternators, of which two have been erected. The turbines are of the compound horizontal impulse type, and work with steam at a pressure of 180 lb. per square inch and a temperature ranging from saturation to 620 deg. Fahr. at the stop-valve, the normal speed being 3,000 revolutions per minute. Mr. Lacey described the construction of the turbines, and drew attention to special features, more particularly to the provision of directing boxes for the control of the various oil- and water-pumps, which, although the rule for marine work, have been but little used on land.

The condensers are of the surface type, with rotary kinetic air-pumps and centrifugal water-circulating pumps driven by electric motors. The alternators are of the revolving-field type, and generate three-phase alternating current at a pressure of 6,600 volts between phases, with a frequency of 50 cycles per minute, the full-load output of each alternator being 5,000 kilo-volt-amperes.

The cost of a 12,000-kilowatt station of the design described, at 1914 prices, is approximately £5 3s. od. per kilo-volt-ampere of plant installed, or £6 12s. od. per kilowatt ( $\cos \phi = 0.8$ ). It is claimed that the economy of the Walsall design represents not less than 30 to 40 per cent., and that not only has this economy been obtained without any sacrifice of efficiency for the sake of cheapness, but this type of station is, in fact, far more economical in operation than stations of more than usual design.

The cost of producing electricity at a station of this type was fully dealt with by Mr. Lacey, and curves showing these costs and the effect of the load-factor thereon have been prepared. The total annual costs of production and costs per kilowatt-hour sent out with a station load-factor of 30 per cent. were shown in detail.

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281-3, Attercliffe Common,  
Sheffield



# LATE CONTRACTS, ETC.

## BUILDING.

June 1.—**DWELLINGS.** **Huddersfield.**—Various works in erection of seventy-two workmen's dwellings (in twelve separate blocks), on the Royds Hall estate, for the Corporation. Plans, specifications and general conditions may be seen, and bills of quantities and forms of tender obtained on application at the offices of the Borough Engineer and Surveyor, 1, Peel Street. Tenders to Town Clerk, Town Hall, Huddersfield.

June 7.—**REPAIRS, ETC.** **Norwich.**—Exterior repairs and painting to twenty-two houses in Waterloo and Magpie Roads, Norwich, for the Corporation. Specifications, etc., may be seen and forms of tender obtained at the office of A. E.

Collins, M.I.C.E., City Engineer, Guildhall, Norwich. Tenders to the Chairman of the City Committee.

No date.—**ALTERATIONS.** **Burnley.**—Internal alterations at the grammar school, for the Education Committee. The alterations consist principally of joiners' work. Persons desirous of tendering should apply to G. H. Pickles, M.I.C.E., Borough Engineer, Town Hall.

No date.—**ALTERATIONS.** **Boughton (Chester).**—Alterations at the Workhouse, Boughton, Chester, for the Guardians of Tarvin Union—viz.: (a) general builders' work; (b) plumber and gasfitters' work. Plans can be seen and particulars obtained on deposit of £1, at the office of H. Beswick, F.R.I.B.A., Architect, Newgate Street, Chester.

## PAINTING.

May 30.—**PAINTING.** **Bucknall (Stoke-on-Trent).**—Painting outside of the buildings at Bucknall Hospital, for the Stoke-on-Trent and Stoke Rural Joint Hospital Board. Contractors must send names and addresses to Mr. E. Jones, M.S.A., Architect to the Board, 10, Albion Street, Hanley, from whom copies of specification can be obtained.

June 9.—**CLEANING AND REPAIRING.** **Preston (Lancs.).**—Cleaning and repainting of steel and ironwork in fifteen county and hundred bridges in Lancashire, for the Lancashire County Council. Specification and forms of tender on application to the County Bridgmaster, County Offices, Preston. The work must be completed by September 30. Tenders to the Chairman, Main Roads and Bridges Committee, County Offices, Preston.

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## SANITARY ENGINEERING.

May 31.—**LAVATORY.** **Wivenhoe.**—Erection of a public lavatory in the grounds of the Council's Offices, at High Street, Wivenhoe, for the U.D.C. Plans and specifications may be seen by applying personally to the Council's Surveyor, Robert H. Barrell, of Belvedere, Rectory Road, Wivenhoe. Tenders to Frank J. Byles, Deputy-Clerk, 8, East Stockwell Street, Colchester.

## MISCELLANEOUS.

June 6.—**CLEANING, ETC.** **London.**—Execution of the following works for the Metropolitan Asylums Board: (1) Cleaning and repairing works at the South-Eastern Fever Hospital, Avonley Road, New Cross, S.E.; (2) repairs to roads at the Brook War Hospital, Shooters Hill, Woolwich. Drawings and specifications prepared by T. Cooper, M.Inst.C.E., M.I. Mech.E., Acting Engineer-in-Chief. Drawing, specifications, and forms of tender may be inspected at the Office of the Board, Embankment, E.C., and obtained on deposit of £1 in respect of each work. Tenders to the Office of the Board.

## Publisher's Notices.

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# FACING THE FUTURE

THE recent appointment of a Board of Fuel Research is bound ultimately to effect radical changes in almost every home in the land and to exercise in the future an important influence on domestic architecture and building.

When our stock of coal, the amount of which can be fairly accurately estimated, approaches exhaustion, our industrial prosperity must begin to totter ; and the new Board has been constituted with the object of postponing that disaster as long as possible.

It has therefore been vested with the power not only of initiating industrial and laboratory research into the use of coal but also of carrying its conclusions into effect ; and it cannot fail to strike sooner or later at the two chief sources of waste—the burning of raw coal in domestic grates (especially in the kitchen range) and in steam boiler furnaces respectively. Both these systems are inadmissible, not only as wasteful of the coal itself, but also as causing a total loss of the valuable by-products which could be obtained from its distillation in the gasworks retorts.

It may accordingly be expected that in the near future the doom of the coal fire will be pronounced ; and architects and builders will have to consider how they propose to deal with the necessary alterations in house construction and equipment which will be an inevitable consequence.

For reasons alike of efficiency, convenience, and economy of money, time, and labour it seems probable that coal gas will henceforward be the principal source of domestic heat—to say nothing here of its industrial possibilities ; and architects and builders requiring information as to this, the fuel of the future, and its manifold applications are invited to communicate, free of all obligation, with the Secretary, the British Commercial Gas Association, 47, Victoria Street, S.W.1. The Association is an advisory and research body representing the chief gas undertakings of the United Kingdom, and its services are always at the disposal of readers of this paper.

## A VISIT TO BATH ABBEY CHURCH HOUSE.

The members of the Bath and district branch of the Somerset Archæological and Natural History Society have visited the Bath Abbey Church House (Hetling House).

The Rector of Bath (Preb. S. A. Boyd) gave a brief history of the building. That there was a building there of some sort before 1570 was certain. Probably many buildings had stood there from Roman times onward. Of Roman remains, however, they knew nothing, but within the recollection of the late Major Davis, city architect, "several circular arches and Norman capitals were discovered." The conjecture was that they belonged to the hospital for lepers founded, it was supposed, on this site in 1138 by Bishop Robert of Lewes, who rebuilt the Abbey Church after a destructive fire. It was pretty evident that the oldest portion of the present building was the portion in which the concert room was situated.

It was supposed that the builder, in Queen Elizabeth's reign, was Edward Clarke, a member of a family long resident at Chipley, Milverton, but that conjecture was based entirely on the fact that the coat-of-arms on the great fireplace in the concert-room seemed to be the Clarke coat. Later the house was certainly known as Hungerford House, and it was on record that Sir Walter Hungerford, of Farleigh, Hungerford, "built himself a town house overlooking the western borough walls." One of the Hungerfords having married into the Lexington family, the first Lord Lexington be-

came the next owner, and the house was for a while known by his name. In 1740 Princess Mary of Hesse, fourth daughter of King George II., accompanied by her niece, Princess Caroline, afterwards Queen of Denmark, lived there for a time. William Hetling, a wine merchant, was the next owner, whose name remained.

Preb. Boyd described the restoration under Mr. S. S. Reay, in 1911. The north-west front, facing Westgate buildings, had been rebuilt. The unsightly windows inserted towards the end of the eighteenth century were removed and replaced by the elegant arrangement now to be seen, and other improvements were effected, but much remained to be done. A handsome stone doorway should give access to the entrance hall, the windows to the right of the main door and those on the north side, would have to be brought back to their original character. In the concert room only a beginning had been made. The painting and gilding of the fine fireplace must be removed, and the grate replaced by a cast-iron Sussex fire-back with andirons. The panelling must be cleaned and refixed, and the rest of the room panelled with oak, and the room lighted by antique brass candelabra.

Mr. Mowbray A. Green then drew the attention of the party to a number of interesting architectural features, which indicated the character of the original building. On the north side there still existed a large room below the present ground floor level. The windows in this room had been raised, and there were probably two stories between the basement and the concert room. This was shown by the relieving arch above the larger area on the north side, and there also remained over

the eastern jamb the stone which previously formed the terminal of the outside drip moulding, the moulding itself having been cut off. It was clear that originally the ground around the building was at a very much lower level than at present, and it was said that an archway previously existed leading westwards from the front arch under the present street to the further side of the road. The level of the ground at the back of Westgate buildings would seem to show that this theory was correct, the King's mead running down to the river bank. Taking the party down the precipitous steps that led into the lower storey on the south side of the chamber, Mr. Green pointed out that the outer of two beams had first of all been chamfered, and afterwards cut away to give access down the steps, which all pointed to the fact that the steps were of later date, and that probably the ground outside was at much the same level. There were three moulded stone corbels in each of the side walls in the first room, and the height from the floor to the top of the corbels was at present 5 ft. 10 in., so that the floor had probably been raised a foot. At some time the room was of the total length of 46 ft., and had been divided into two parts. The room was probably lighted from the north, but the windows had been altered a good deal. Part of the oak lintel which supported the internal portion of the wall still existed in the pier between the windows. The lower portion of the original bay window in the west wall abutting on Westgate Buildings could also be seen. It was below the present road level. The entrance doorways, now walled up, leading to the storey over this room, could still be seen in the passage at the top of the steps.—"Bath Herald."



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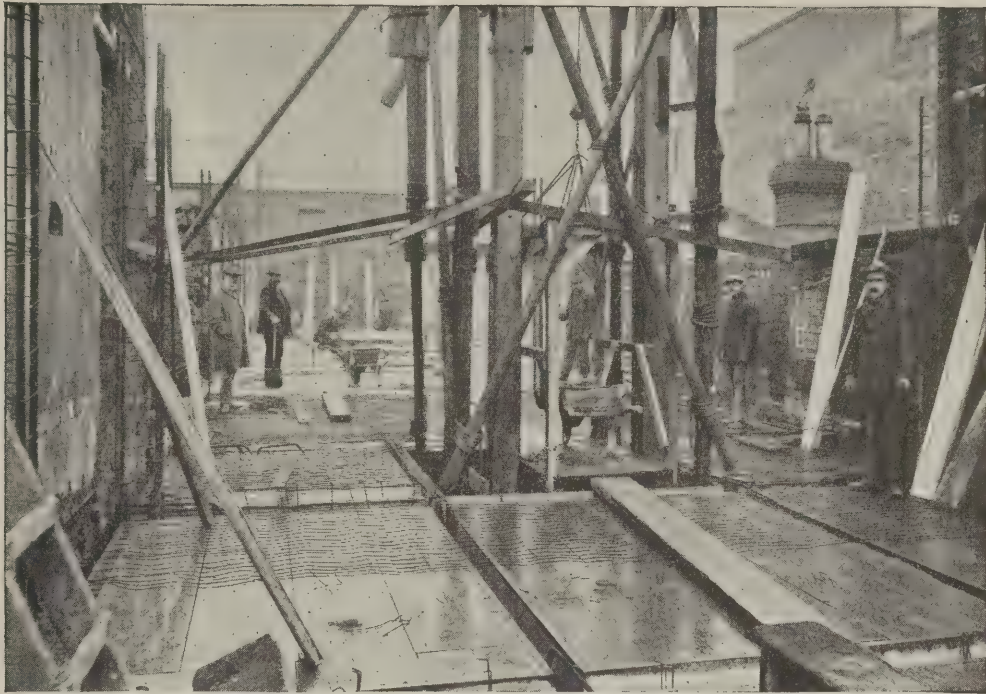
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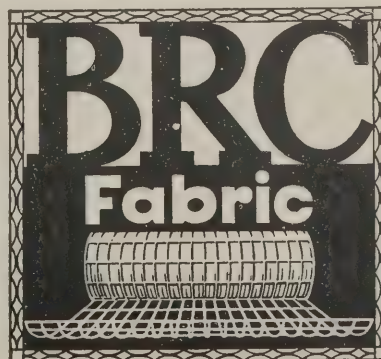
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Sheffield: 38, Church St.  
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**B-R-C**



June 30.—**HOSPITAL EXTENSIONS, ETC. Grimsby.**—Extensions to the isolation hospital (corrugated iron) at Immingham, and the painting of roofs, sides and external woodwork of existing building and new block, for the R.D.C. Specifications may be obtained and detail plans and conditions of contract inspected at the Engineer and Surveyor's Office, Council Offices, Grimsby, on deposit of a £1 Treasury note. Tenders to the Clerk to the Council.

#### PAINTING.

June 27.—**PAINTING STATIONS. Oswestry.**—Painting the following stations for the Cambrian Railways Company: Montgomery, Bow Street, Arthog, Harlech, Moat Lane, Llwyngruil, Pensarn, Portmadoc. Specifications and particulars may be obtained on application to G. C. McDonald, Chief Engineer, Cambrian Railways, Oswestry, to whom tenders are to be sent.

*Late Contracts continued on page xvi.*

#### BUILDING LOANS AND THE HOUSING PROBLEM.

In the course of a valuable paper read before the Surveyors' Institution, Mr. J. G. Head, F.S.I., showed that property is no mere matter for speculative enterprise, but provides a means of investment of the highest order, and with its influence of political and economic importance is entitled to be considered the premier security of the nation. Moreover, bound up with its well-being is the problem of the housing of the people. Unless the property market is in good condition houses

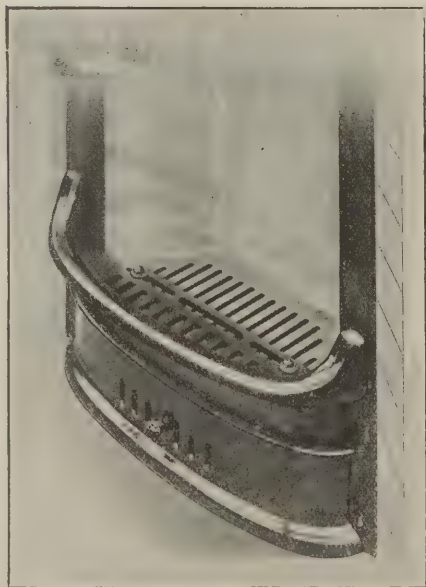
cannot be built, and people must suffer for want of a roof to shelter them. That this is no idle statement is shown by the actually existing state of things. Of the total number of small houses built at least 97½ per cent. have been erected by private enterprise, the remaining insignificant fraction representing the entire output of national and municipal bodies and of public utility societies.

Cheap money is required during the coming transition period, and if the market is to be effectively assisted extended loans must be the rule and not the exception. If these cannot be obtained through the ordinary banks such institutions as trade banks must be set up, which, being free from the restrictions of ordinary banking, will be in a position to foster commercial undertakings wherever advances of capital may be required. The security upon which such banks rely is fourfold—the merits of the particular scheme, a certain amount of control in the prosecution of the object, the goodwill of the business, and the financial standing, character, and ability of the borrower. These, which constitute "latent security," are to be found, it is urged, in the property market, except in the case of pure investment, where, however, there is an effective substitute available, the key to which is to be found in the methods of building societies, namely, the regular and systematic repayment of interest and capital.

Mr. Head suggests that the building society system itself is insufficient to meet the difficulty, and what is wanted is a lending organisation operating throughout the land, able to lend money at the lowest rate consistent with the avoidance of loss,

and possibly receiving direct assistance from the State. Under existing conditions, when a man borrows money to complete a purchase, he takes the whole of the income, pays interest on the loan, and retains the rest as an annual profit on his investment. The suggestion is that this process be reversed; that where the lending association advances a larger portion than the customary two-thirds, it should receive the whole of the income, pay the borrowing owner interest on the capital left by him, and retain the balance towards the reduction of the loan. By this means the lending association would recoup itself gradually until the loan became small enough to be transferred to a private lender by way of an ordinary mortgage. This method would meet the difficulty of money shortage, free the loan capital sooner than under the building society or instalment method, cultivate thrift by making possible the purchase of a home, and stimulate the building of houses by private enterprise, thus going far towards solving the housing problem. Further, by its automatic action in securing regular payment of interest and replacement of capital, it would qualify the transactions for the property market for participation in the assistance of the trade bank or other similar institution.

Finally, Mr. Head says that Part I. of the Finance Act ought to be repealed, "not as an undue favour to holders of landed property, but as a measure of necessity directed towards the conservation of the national resources." His objections to the Act are based, not on the appropriateness or otherwise of this taxation, but on the "ambiguous and confused language" of the Act.



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## ELECTRICAL NOTES.

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Fittings with X-Ray reflectors are produced in many forms, such as opaque and luminous bowl pendants, wall brackets, flambeau pendants, and floor and table lamps. The Indirect principle can also be applied in special cases to existing cornices or the permanent fixtures of an interior.

*Some Principles of Good Lighting.*

Mr. P. G. Nutting, who has made a close study of scientific illumination, gives the results of his investigations in a contribution to the Journal of the Franklin Institute, from which the following interesting excerpt is taken: In the highest form of lighting the minutest detail has to be critically observed, and only the very best lighting conditions will prevent visual discomfort and eye-strain. Fine needlework requires perhaps as high-class lighting as any. Interest centres on a mass of fine bright images formed by the needle and fibres of textile goods. If all the light is diffuse these images broaden and merge and shadows disappear. Vision is strained by the attempt to pick up faint contrasts just at the limit of the power of discrimination. The most suitable local lighting is that limited to nearly a single direction. What is seen is a mass of cylindrical images of the source, and if the source subtends but a small angle, these images are sharp and contrasty. In dealing with lightning there are two extreme views: on the one hand the view of those who ignore defects and tolerate any lighting that does not cause permanent injury to the eyes; on the other the view of those who attach great importance even to minor and trivial sources of discomfort. The true view lies intermediate between these courses. Our over-worked and much-abused eyes should be relieved from the wear and tear of the bad lighting conditions which we ourselves have put upon them. But it would be unwise and unnecessary to relieve them of all discomfort at all times, for this would surely result in a deterioration of the eye adaptability of the eye itself. Our standard should be the comfort of out-of-doors daylight lighting; abundant light, 30 per cent. diffused—and by far the most important—but moderate contrasts anywhere.

*A New Electric Heater.*

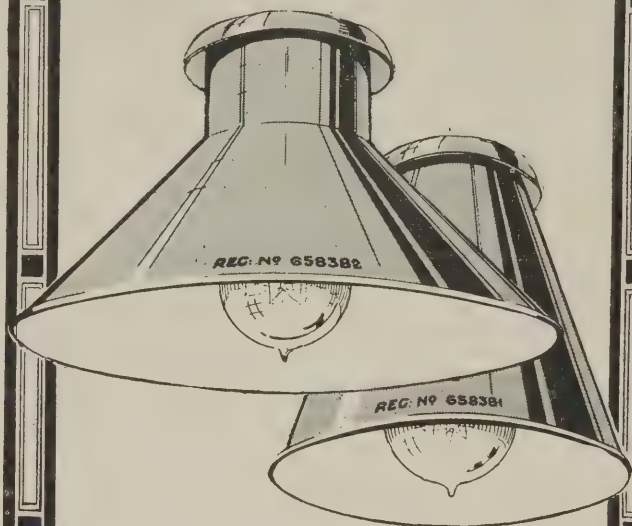
A particularly efficient type of electric heater is the new "Palissy" Panel Fire, patented and manufactured by Messrs. The General Electric Co., Ltd. At the present time, when the conservation of metal is of urgent national importance, the "Palissy" has much to commend it. The material of which the case is made is a special glazed earthenware of the highest dielectric strength. In design, the fire is of pleasing simplicity. It has none of the redundant ornament so frequently to be observed in the ordinary commercial article. From the nature of the material and the high quality of its glazed surface, it is an easy matter to preserve the freshness of its appearance. The fire is made in various colours, allowing a wide range for selection, and thus ensuing harmony with existing decorative schemes. The fires are made in two sizes, one having a current consumption of  $1\frac{1}{2}$  units per hour, and the other 2 units per hour. In both cases the control is by two quick-break snap-switches.

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## ENGINEERING.

June 28.—**BOILER.** Crosby (Maryport).—Erection of a new water-heating boiler for Crosscanonby Church. Particulars of Miss A. Fawcett, Secretary to the Parochial Church Council, Crosby, Maryport, to whom tenders should be sent.

June 30.—**ELECTRICAL PLANT.** Newport (Mon.).—Supply of the following: Section (1).—Induced draught plant. Section (2).—Additions and extensions to fuel economisers. Section (3).—Cooling towers, for the Corporation. Forms of tender and contract, specification, and drawings, and any further information may be obtained on application to A. Nichols Moore, M.I.E.E., Borough Electrical and Tramways Engineer, Town Hall, Newport, Mon., on deposit of £2 2s. for each section. Tenders to the Town Clerk, Town Hall, Newport, Mon.

## PAINTING

June 27.—**PAINTING DWELLINGS.** Chelmsford.—Painting parts of the interior and exterior of 106 working-class dwellings in Rainsford Lane, for the Town Council. Particulars of work, together with copies of specification, may be obtained upon application to P. T. Harrison, A.M.I.C.E., Borough Engineer, Municipal Offices, Chelmsford. Tenders must be delivered at the office of G. Melvin, Town Clerk, Municipal Offices, Chelmsford. Fair wages clause.

July 6.—**PAINTING SCHOOL.** Goodwick (Pembroke).—External painting of Goodwick Council School and internal colouring of adjoining dining-room buildings, for the Pembrokeshire Education Authority. Specifications and forms of tender on application to the Clerk of Works, County Education Offices, Haverfordwest. Tenders to the Clerk to the

Education Committee, County Education Offices, Haverfordwest.

July 11.—**PAINTING BRIDGES.** Durham.—Painting the following bridges, for the Durham C.C., viz.: (1) Crook; (2) Daddryshield Wear; (3) Daddryshield No. 2; (4) High Team; (5) Ireshopeburn; (6) Killhope Foot; (7) Killhope Mill; (8) Low Team; (9) Nancy Pasture Foot; (10) Newton Cap; (11) Parkhouse Pasture; (12) Penshaw; (13) St. Helen's, Auckland; (14) Westgate; (15) Wearhead; (16) Wolsingham. Specifications and conditions may be seen at the County Surveyor's Office, Shire Hall, Durham. Tenders to A. E. Brookes, County Surveyor.

## ROADS & CARTAGE.

June 30.—**MACADAM.** Merthyr Tydfil.—Supply at various railway stations within the Borough for a period of one year of: (a) Limestone macadam, gravel, and chippings. (b) Granite of basalt macadam and chippings. (c) Tar macadam and chippings, for the Corporation. Specification and form of tender for either or all kinds of stone may be obtained from the Borough Surveyor. Tenders to T. Aneuryn Rees, Town Clerk, Town Hall, Merthyr.

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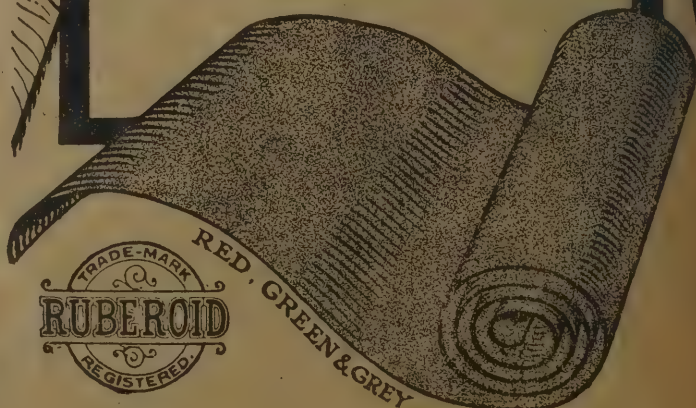
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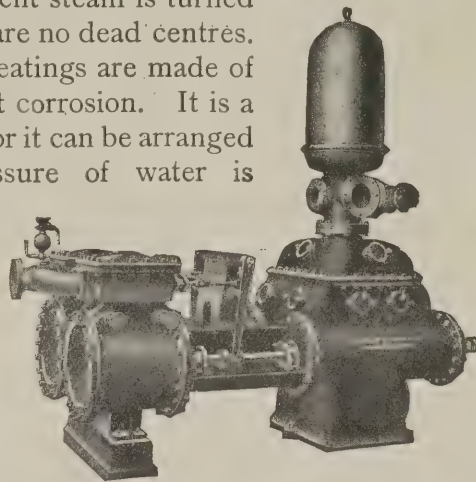


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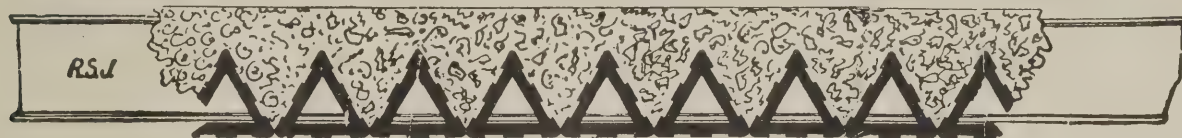
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## BUILDING.

June 28.—**BUILDERS' MATERIALS, ETC. Exminster.**—Supplying Devon County Lunatic Asylum with building materials, engine oils, belting and packing, builders' ironmongery, electrical appliances, and rubber goods, from July 1, 1917, to June 30, 1918. Tenders, on forms to be obtained of Cecil Masters, Clerk, Exminster, are to be signed, sealed, and delivered to E. H. Harbottle, County Chambers, Queen Street, Exeter, accompanied by samples where required.

June 28.—**HOUSES. Huddersfield.**—Various works required in erection of twenty-two dwelling-houses (in four separate blocks) at Bradley; also construction of a new street in connection therewith, for the Corporation. Draft of contract may be inspected at the Town Clerk's

Office, Town Hall. Plans, specifications, and general conditions may be seen and bills of quantities and forms of tender obtained on application to K. F. Campbell, M.I.C.E., Borough Engineer and Surveyor, 1, Peel Street. Tenders to Town Clerk, Town Hall, Huddersfield.

June 29.—**FOUNDATIONS. Hull.**—Builders' and ferro-concrete work in connection with foundations and pond for water-cooling towers on land adjoining the electricity works, Sculcoates Lane, for the Corporation. Forms of tender and other particulars at the City Engineer's Office. Tenders to be addressed to the Chairman of the Electricity Committee, and delivered at the Town Clerk's Office.

June 30.—**REPAIRS, ETC. Llandy-gwydd (Cardigan).** Repairs and alterations, in the holidays, to school buildings and playground at Llandygydd N. School. Specifications can be seen at Llwyndurris. Tenders to Major Griffith, Llwyndurris, Llechryd, Cardiganshire.

June 30.—**ALTERATIONS. Trowbridge.**—Alterations, additions, repairs, and renovations, etc., at the following Council schools during the summer vacation, 1917, for the General Education Committee of Wilts C.C. in accordance with plans and specifications prepared by the county surveyor—viz.: Atworth; Bromham; Bremhill; East Tytherton;

Brinkworth; Chippenham Ivy Lane; Chippenham Westmead mixed and infants'; Corsham Pickwick; Corsham Methuen; Corsham Neston; Corsham boys' and infants'; Downton; Donhead St. Mary; Donhead Ludwell; Edington and East Coulston, Great Cheverill; Highworth mixed and infants'; Idmiston; Luckington; Milton Lilbourne; Melksham Lowbourne infants'; Pewsey mixed and infants'; Purton; Rodbourne Cheney; Rodbourne Cheney Haydon; Ramsbury; Ramsbury Axford; Stratton St. Margaret; Upper and Lower Stratton boys' and girls' and infants'; Shalbourne Oxenwood; Trowbridge Newtown; Trowbridge Adcroft boys' and girls' and Margaret Stancomb; Wanborough; Wroughton girls' and infants'; Wootton Bassett; Westwood with Ilford and West Dean Council schools. Plans and specifications and forms of tender on written application to J. G. Powell, County Surveyor, Trowbridge. Tenders to be delivered at the Town Clerk's office.

July 5.—**REPAIRS, ETC. Norwich.**—Building repairs, painting, etc., to Nos. 3, 4, 7, and 15, Victoria Street, Norwich, for the Corporation. Specifications, etc., may be seen and forms of tender obtained at the office of Arthur E. Collins, M.Inst.C.E., City Engineer, Guildhall, Norwich.

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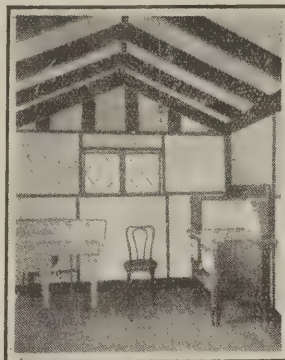
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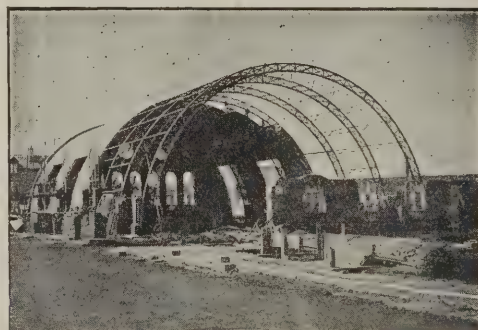
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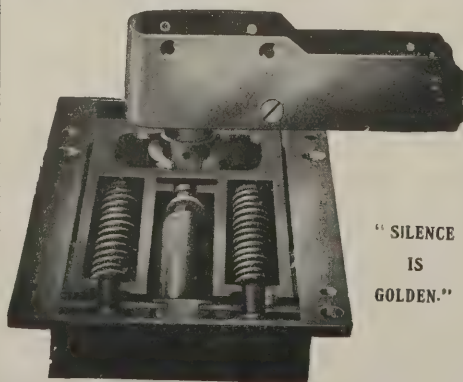
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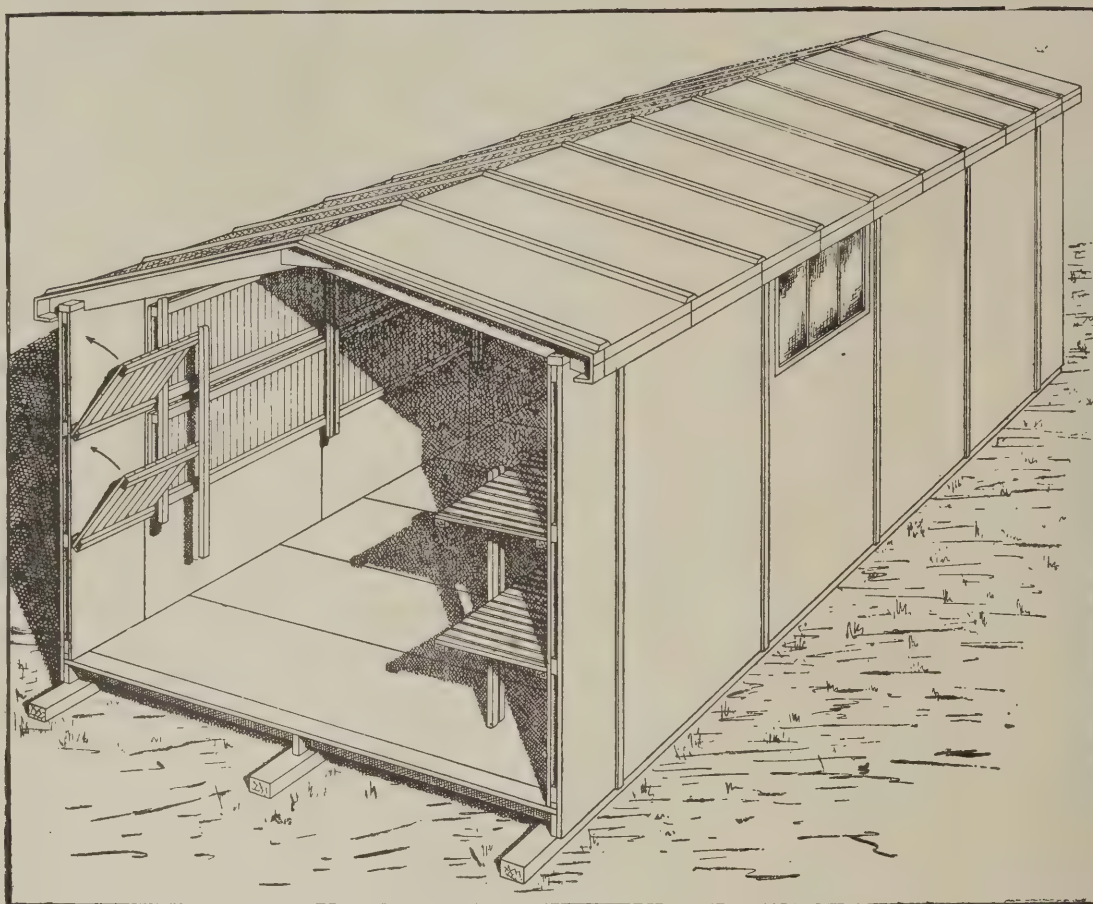
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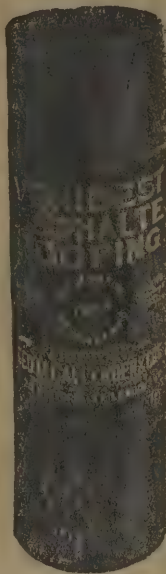
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